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SECONDARY ITEM PROCUREMENT LEAD TIME STUDY

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LOGISTICS SYSTEMS ANALYSIS OFFICE

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FOREWORD

The Deputy Assistant Secretary of Defense (Logistics and Materiel Management) requested the Logistics Systems Analysis Office (LSAO) to conduct a study to develop proposed statements of DoD policy for the determination of realistic procurement lead times for secondary items.

This study report documents the current DoD policies and practices for determining procurement lead time. It also reviews the practices of a sample group of Defense contractors. Following an analysis of the DoD and industry findings, the report presents the study conclusions and recommendations, which include proposed DoD policy statements for improved lead time forecasting.

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TABLE OF CONTENTS

SECONDARY ITEM PROCUREMENT LEAD TIME

<u>Chapter</u>		<u>Page</u>
	FOREWORD	111
	TABLE OF CONTENTS	v
	LIST OF FIGURES	vi
	LIST OF APPENDICES	vi
	EXECUTIVE SUMMARY	vii
I	INTRODUCTION	1
	A. Background	1
	B. Description	1
	C. Study Team Composition	2
	D. Approach	2
	E. Report Organization	3
II	FINDINGS, ANALYSIS AND CONCLUSIONS	5
	A. General	5
	B. Segments of Lead Time	5
	C. Use of Historical Information	10
	D. Use of Contractor-Furnished Information	11
	E. Generic Coding	15
	F. Monitoring the Accuracy of Lead Times	16
III	RECOMMENDATIONS	17

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
II-1	Comparison of ALT	6
II-2	Comparison of PLT	7
C-1	Segmentation of ALT - Army	27
C-2	Segmentation of PLT - Army	28
C-3	Segmentation of ALT - Navy	31
C-4	Segmentation of PLT - Navy	32
C-5	Segmentation of ALT - Air Force	36
C-6	Segmentation of PLT - Air Force	37
C-7	Segmentation of ALT - Marine Corps	40
C-8	Segmentation of PLT - Marine Corps	40
C-9	Segmentation of ALT - DLA	42
C-10	Segmentation of PLT - DLA	43
G-1	Proposed Segmentation of Procurement Lead Time . .	57

LIST OF APPENDICES

<u>Appendix</u>		<u>Page</u>
A	Study Tasking Memorandum and Study Plan	19
B	Field Research Sites	25
C	Current DoD Policies and Practices	27
D	Defense Contractor Practices	47
E	Study References	51
F	Related Sources	53
G	Procurement Lead Time (Proposed)	55

EXECUTIVE SUMMARY

This study of Secondary Item Procurement Lead Time was accomplished at the request of the Deputy Assistant Secretary of Defense (Logistics and Materiel Management). Research was conducted at Service and DLA headquarters, ICPs and central design activities, and Defense contractor facilities.

The study reveals differences among the DoD Components in the determination of procurement lead times. The Components begin the Administrative Lead Time (ALT) segment of procurement lead time with several different dates, but all end ALT with the date of contract award. The contract award date becomes the beginning of the Production Lead Time (PLT) segment which ends with receipt of a significant delivery. Each DoD Component defines significant delivery differently.

Lead time forecasting methodologies used by the Components also differ, but all restrict the use of historical data to representative procurements. With the exception of the Marine Corps, all Components make some use of periodic survey quotes of PLT received from Defense contractors.

Differences also exist in parameters for minimum/maximum lead times, default values for items lacking lead time experience and the manual override capabilities of the DoD Components.

The Army and Air Force are developing a generic coding concept that will permit the categorization of items by such things as raw material content, major manufacturing processes and identification of foreign source items. Market conditions may be monitored to detect changes in these categories thus allowing earlier adjustment of lead times. This could permit initiation of more timely procurement actions which lead to less out-of-stock and long supply conditions.

Defense contractors provided information on their methods of projecting lead times and indicated an overall willingness to provide periodic quotes of lead time to DoD Components if the frequency and volume were limited.

The study recommends that DoD issue policy statements incorporating standard definitions of a representative procurement; the beginning and ending events of the segments comprising procurement lead time; and the use of historical information and contractor quotes in lead time projections. It also recommends that DoD increase the emphasis on lead time accuracy by the Components and consider the development of a standard DoD generic coding concept.

CHAPTER I

INTRODUCTION

A. BACKGROUND

Currently, there is no standard Department of Defense (DoD) policy governing the determination of procurement lead time for secondary items. Consequently, DoD Components use differing methods to project the Administrative Lead Time (ALT) and Production Lead Time (PLT) segments that comprise the procurement lead time. ^{1/}

A June 1983 General Accounting Office (GAO) report contended that inaccurate PLT information was being used by the San Antonio and Oklahoma City Air Logistics Centers (ALCs) to determine secondary item requirements. While some items had understated requirements, the vast majority of item requirements were overstated. GAO observed that these inaccuracies resulted in a less than optimum use of secondary item funding.

Recent follow-up information obtained by GAO appears to verify their original contention. Updated information has been obtained on 212 of the original 257 sample items. Of these, the PLT has been changed on 175 items; 142 reflect decreases, 33 reflect increases.

The Fiscal Year 1983 dollar value of procurement lead time for all secondary items within DoD exceeds \$15 billion. One day of lead time equates to approximately \$30 million. Based on these figures, it becomes evident that inaccurate estimates of lead time can be quite costly. Overstatement of lead time ties up funding that could be better utilized elsewhere, and increases the likelihood of long supply conditions. On the other hand, understated lead times can result in stock-outs and thus, a degradation of materiel readiness.

The DASD(L&MM), believing that problems exist throughout the DoD Components with respect to the determination of procurement lead times, requested that LSAO conduct this study. The tasking memorandum and study plan are found at Appendix A.

B. DESCRIPTION

1. Purpose. The purpose of the study was to develop proposed DoD policy statements for the determination of procurement lead time for secondary items.

^{1/} In this report, the abbreviations ALT and PLT will be used for Administrative Lead Time and Production Lead Time, respectively. When a reference is made to procurement lead time, no abbreviation is used.

2. Scope. The study encompassed the Inventory Control Points (ICPs) of the Military Services and the Defense Logistics Agency (DLA) as well as selected Defense contractors. The focus was on the hardware commodities.

3. Objectives. The objectives of the study were twofold, specifically:

a. To review the practices currently used by DoD Components and selected Defense contractors for determining procurement lead times for secondary items, and

b. To develop standard criteria, in the form of proposed statements of DoD policy, for the determination of realistic procurement lead times for secondary items.

C. STUDY TEAM COMPOSITION

1. OSD Sponsor: Mr. Maurice N. Shriber, Director for Supply Management Policy OASD(MI&L).

2. Study Manager: Mr. John R. Jivatode, OASD(MI&L).

3. Study Team, LSAO:

Mr. Charles H. Ferguson, Study Director
Mrs. Eileen Sheehan, Team Leader
Ms Patricia R. Mitchell, Systems Analyst

D. APPROACH

The Study Team reviewed current DoD policies for the determination of procurement lead time, including Defense Acquisition Regulations, DoD policy issuances, and DoD Components' publications. Meetings were held with Headquarters officials of the Military Services and DLA to discuss field research sites and exchange general information.

Extensive research was conducted at a number of ICPs to gain firsthand knowledge of how the Components define and measure each segment of procurement lead time. The Team also visited selected Defense contractors to determine how they forecast lead times internally when dealing with subcontractors. A complete list of research sites is included as Appendix B.

An analysis and assessment of Component and contractor methods was conducted to arrive at recommendations for uniform DoD-wide policy regarding:

1. What constitutes a representative procurement;
2. When ALT begins and ends;
3. When PLT begins and ends; and
4. When historical information/contractor quotes should be used for projecting lead time.

E. REPORT ORGANIZATION

In addition to this introductory chapter, the report contains two additional chapters and the appendices, as follows:

-- Chapter II presents the Study Team's findings and analysis of the policies, practices and procedures in use by the DoD Components and Defense contractors and documents the study conclusions.

-- Chapter III provides the study recommendations.

Included in the appendices is a description of the DoD Components' current policies and procedures related to procurement lead time (Appendix C). Appendix D discusses Defense contractor practices for developing PLTs, their willingness to provide periodic quotes and their experience with a generic coding concept.

CHAPTER II

FINDINGS, ANALYSIS AND CONCLUSIONS

A. GENERAL

DoD Instruction 4140.24, Requirements Priority and Asset Application for Secondary Items, refers to ALT as the time interval between initiation of procurement action and award of contract; PLT is described as the time interval between the placement of a contract and the first significant receipt into the supply system of materiel purchased as a result of such action. In the absence of more detailed DoD guidance, the Components have independently developed policies and practices for determining procurement lead times. These policies and practices are documented in Appendix C. Defense contractors provided the Study Team with insight as to how DoD should define PLT and use contractor-furnished data to project PLTs for future buys. The practices of selected Defense contractors are discussed in Appendix D.

Although the Study Team did not attempt to verify the findings of the GAO report, the Team did identify numerous procedures throughout DoD which may contribute to inaccurate procurement lead times in requirements determinations. While it would be difficult to determine the net effect of lead time inaccuracies, any inaccuracy carries the potential for serious impact on the DoD logistics. When overstatements exist, funds applied to those items might lead to greater long supply. Understatements will increase the likelihood of stock-outs and thus impact materiel readiness. With the dollar value of lead time exceeding \$30 million a day in Fiscal Year 1983, it is clear that inaccuracies are costly and should be minimized.

B. SEGMENTS OF LEAD TIME

All DoD Components divide procurement lead time into the two major segments identified in DoD Instruction 4140.24, i.e., ALT and PLT. Comparing the beginning and ending points of the Components' lead time definitions reveals some similarities and many differences. Comparing the Components' PLT definitions to those of the sample group of contractors highlights additional differences. Figures II-1 and II-2 illustrate the comparisons.

1. Beginning of ALT

The Components define the beginning of ALT in one of three ways: the date their automated requirements system generates a notification to buy stock (Figure II-1, ALT I and II), the date when the Inventory Manager (IM) acts on such a notification (Figure II-1, ALT III), or the date the Purchase Request (PR) is received by the purchasing organization (Figure II-2, ALT IV). In all instances, the Components exclude from ALT the interval between the date when the asset position reaches the Reorder Point (ROP) and the date when the requirements system generates

the notification to buy. In the second instance, ALT also excludes the interval between the date of the system notification to buy and the date the IM acts on the notification. In the third instance, ALT also excludes the time during which the IM reviews a recommended buy. Among the Components, the amounts of excluded time vary and can be as much as several weeks.

Exclusion of the intervals described above contributes to inaccurate lead times, because the intervals represent supply pipeline time for which a requirement exists but has not been computed. The ROP is the point at which orders must be initiated so that stock arrives theoretically just as the asset level reaches the safety level. Delaying the procurement actions until the system generates a procurement notice, until the IM acts on the notice, or until the purchasing organization receives the PR shortchanges the procurement lead time and could contribute to out-of-stock conditions. The date when the asset level reaches the ROP, however, is not always easy to identify. Due to ADP system design, most of the DoD Components' systems have periodic rather than continuous review of item asset positions. Nevertheless, the Study Team believes that the beginning of procurement lead time, and ALT, should be set at the ROP. If the ADP systems cannot perform continuous review, the ICPs should compute one-half the average interval between requirements computation cycles and include that time as a part of the ALT.

CONCLUSION:

- DoD POLICY SHOULD REQUIRE THAT ALT BEGIN WITH THE DATE WHEN THE ASSET LEVEL REACHES THE ROP.

COMPARISON OF ALT ^{2/}

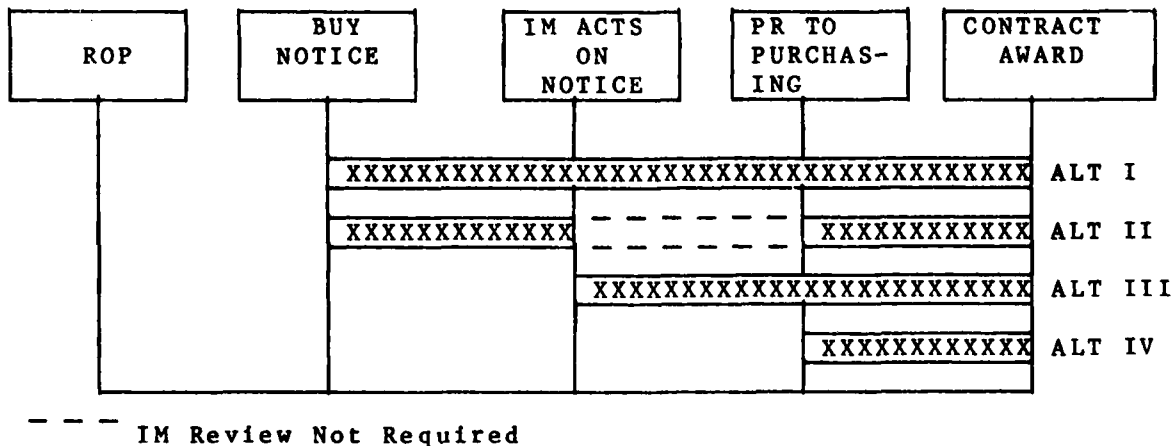


Figure II-1

^{2/} Figures in this report illustrate the events which segment lead time, and are not intended to portray lengths of time.

2. End of ALT/Beginning of PLT

All DoD Components end ALT and begin PLT at the contract award date, also referred to as date of contract issue or contract signature. Order transmittal time is assumed to be part of PLT. Most Defense contractors interviewed by the Study Team, however, assumed that PLT starts with the contractor's receipt of the order from the DoD buying activity (see Figure II-2). The time to mail or transmit the order from the buying activity to the contractor ranged from one day to more than a week.

When PLT is based on a contractor's quote or Estimated Delivery Date (EDD) rather than an actual delivery, it is essential that the DoD buying activity add the actual or estimated order transmittal time to the contractor's quote or EDD to accurately capture all the supply pipeline time in procurement lead time. Today this is generally not done.

Because order transmittal time is part of PLT, there may be a tendency for the Components to be less concerned about the length of this interval, since it is only partially under their control. However, there are means of minimizing order transmittal time, e.g., electronic mail or locating contracting document printers on site at contractors' facilities, which can and should be pursued by the Components.

CONCLUSIONS:

- DoD POLICY SHOULD ESTABLISH THE CONTRACT AWARD DATE AS THE
END OF ALT AND BEGINNING OF PLT.
- WHEN PLT IS BASED ON CONTRACTOR-FURNISHED DATA, DoD
COMPONENTS SHOULD ENSURE THAT ORDER TRANSMITTAL TIME IS INCLUDED.

COMPARISON OF PLT

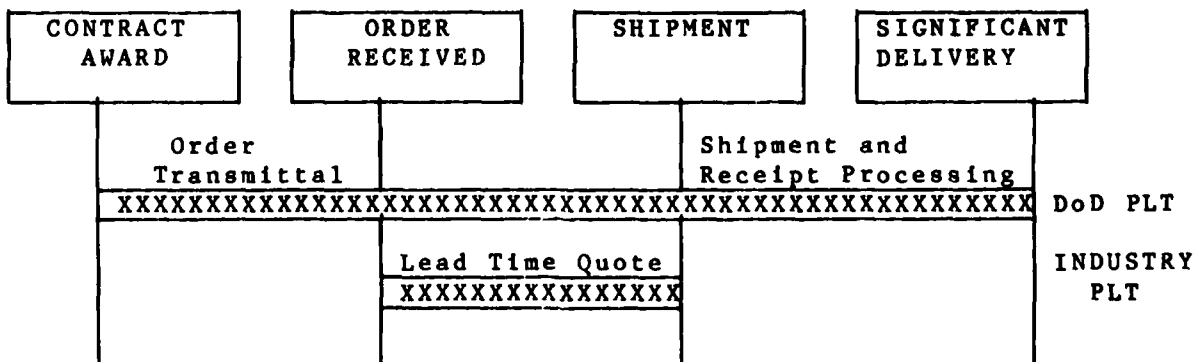


Figure II-2

3. End of PLT

All Components use the significant delivery as the ending event for PLT, but each interprets "significant delivery" differently. The end points range from the first delivery date of any quantity to a more conservative date of receipt of the entire contract quantity. None of the personnel contacted during field research could offer any rationale as to why their Component interprets "significant delivery" as they do.

When the Components compute PLT based on contractor information instead of the significant delivery, different methods are again used. Most contractors assume that lead time ends when the materiel is shipped to the buying activity's storage site (see Figure II-2). To include the shipping and receipt processing time in PLT, the Army, Navy and Air Force add from 13 to 30 days to the contractor's quote or EDD. DLA does not add any time, and the Marine Corps does not normally use contractor-furnished PLT data.

Because no Component could offer rationale for defining significant delivery in a particular way, it is desirable to prescribe a uniform DoD-wide policy. Two alternative definitions were evaluated by the Study Team. First, one interpretation of significant delivery could be the delivery of a quantity sufficient to satisfy demands during the interval between shipments. Application of this definition would be complicated because back-orders, current demand forecasts, and the frequency and number of remaining deliveries would all come into play.

A second method of defining significant delivery, which is supported by several of the Components' operations research staffs, is a weighted average of the receipt confirmation dates for a specific procurement action. The following example illustrates how this works. A quantity of 100 units is delivered in three shipments. The quantity in each delivery and the number of days between contract award and receipt confirmation date are shown below:

<u>Shipment Quantity</u>	<u>Number of Days</u>
25	100
50	115
25	140

To compute a weighted average significant delivery date, the quantity in each shipment is multiplied by the corresponding number of days. The products are summed, and the sum is divided by the total quantity delivered. Applying this to the example yields:

25 units x 100 days	=	2,500 unit days
50 units x 115 days	=	5,750 unit days
25 units x 140 days	=	3,500 unit days
		<u>11,750 unit days</u>

<u>11,750 unit days</u>	=	117.5 days
100 units		

In this example, the significant delivery date would be 117.5 days after contract award. This becomes the PLT observation for this particular procurement action.

The weighted average method is relatively easy to apply and understand. It can be used even when partial delivery has occurred. This is true because, as will be discussed later in this chapter, it is appropriate to include contractor's EDDs in computing PLT. In the example, if the third shipment had not been delivered but was estimated to be received and confirmed 140 days after contract award date, the significant delivery date would be computed in exactly the same way. Ideally, a more accurate significant delivery date would be based only on actual deliveries rather than estimates. However, delaying computation pending receipt of 100% of the contract quantity might prevent the use of the observation in the next requirements determination. Therefore, the Components should use as many actual deliveries as possible, supplemented by EDDs as necessary, to compute weighted average significant delivery dates for PLT observations.

When the Components use contractor-furnished lead time data, and it is known that the contractor ends lead time when shipments begin, the Components must add shipping and receipt processing time to the contractor's data to determine the end of PLT. It is recognized that the added time might vary in length depending on the distance between shipper and depot, the mode of transportation used, and the quantity shipped; however, for purposes of estimating PLT, 15 days shipping and receipt processing time would be adequate.

CONCLUSIONS:

- DoD POLICY SHOULD ESTABLISH THE END OF PLT AS THE RECEIPT CONFIRMATION DATE (WHEN CONTRACTOR-FURNISHED DATA IS USED) OR SIGNIFICANT DELIVERY DATE (WHEN HISTORICAL INFORMATION IS USED).
- RECEIPT CONFIRMATION DATE FOR PLT BASED ON CONTRACTOR-FURNISHED DATA SHOULD BE ESTIMATED BY ADDING TO THE CONTRACT AWARD DATE THE ORDER TRANSMITTAL TIME, CONTRACTOR QUOTE, AND UP TO 15 DAYS SHIPMENT AND RECEIPT PROCESSING TIME.
- SIGNIFICANT DELIVERY DATE FOR PLT BASED ON HISTORICAL INFORMATION SHOULD BE A QUANTITY-WEIGHTED AVERAGE OF RECEIPT CONFIRMATION DATES AND, IF NECESSARY, CONTRACT EDDs.

C. USE OF HISTORICAL INFORMATION

1. Representative Procurements

Historical information plays a significant role in the determination of lead times in DoD. All Components use actual lead time values to determine ALT and PLT; however, their use is restricted to representative procurements. Basic guidance throughout DoD is that a representative procurement is one made for replenishment of wholesale stock, when the action is routine in nature or circumstances affecting the procurement can be expected to continue on a permanent basis. Nonrepresentative actions are those which have unusual circumstances such as:

- urgent bids
- direct delivery orders
- phased deliveries at the ICP's request
- expedited deliveries
- delays due to extended contract delinquencies, strikes, natural disasters, funding problems, litigation, and missing technical data.

For ALT, the actual experience of the activity buying an item is essential to develop a standard, to use in a forecasting model, or to provide surrogate experience for a similar item which has not yet been purchased. For PLT, historical information is especially important when contractor-furnished quotes are not available or are not considered reliable. No matter how historical information is used in determining ALT or PLT, its purpose is to predict future lead times. If representative procurements are assumed to have a higher probability of recurring than nonrepresentative procurements, limiting the use of historical information to representative procurements is a way of increasing the reliability of the prediction process. Assumptions such as this are used successfully in other areas of supply policy, e.g., demand forecasting, and the Study Team found no basis for challenging the assumption.

CONCLUSIONS:

- DoD POLICY SHOULD DEFINE "REPRESENTATIVE PROCUREMENT."
- DoD POLICY SHOULD SPECIFY THAT ALT BE BASED ON HISTORICAL INFORMATION, AND WHEN ALT AND PLT ARE BASED ON HISTORICAL INFORMATION, THEIR COMPUTATION SHOULD BE LIMITED TO REPRESENTATIVE PROCUREMENTS.

2. System Restrictions

All the Components impose restrictions on the values of ALT and PLT, regardless of whether the values are based on historical or contractor-furnished data. One type of restriction is maximum and minimum ALT/PLT. At the ICPs visited, maximum ALTs ranged from 90 days to 999 days, and one ICP had no maximum ALT.

Maximum PLTs ranged from 630 days to 99 months, and one ICP had no maximum PLT. Only DLA uses a minimum ALT, which is currently 30 days. Only the Army permits a minimum PLT, and the value varies by ICP. While the Study Team did not attempt to verify the rationale for particular maximums or minimums, these limits are useful in alerting the IMs to unusually low or high lead time values. The broad differences among the Components' maximum values were particularly striking. If the maximums are set too high or do not exist, they are ineffective because they can permit high values, which perhaps are inflated due to error or misinformation, to be used in the system without easy detection. Having the Components review ALT and PLT parameters to ensure that the limits are not excessively high or low would help improve the accuracy of lead times.

All the Components assign default values for ALT and PLT. Army and Air Force each use system-wide values. Navy's default values vary by ICP. DLA and Marine Corps assign defaults to secondary items by ICP and FSC or other supply management grouping. It is recognized that default values are necessary when historical or contractor-furnished information is lacking. But ALT and PLT are dependent on the procurement characteristics of items, e.g., cost, type of procurement document used, availability of raw materials, and manufacturing process. When default values are assigned without considering the procurement characteristics of items, which appears to be the case for many of the Components, the potential for inaccurate lead times abounds.

CONCLUSIONS:

- DoD POLICY SHOULD REQUIRE THE COMPONENTS TO ESTABLISH REALISTIC MINIMUM AND MAXIMUM VALUES OF ALT/PLT.
- DoD POLICY SHOULD REQUIRE THAT DEFAULT VALUES OF ALT AND PLT BE ASSIGNED ON THE BASIS OF SPECIFIC PROCUREMENT CHARACTERISTICS.

D. USE OF CONTRACTOR-FURNISHED INFORMATION

1. Contract EDDs. With the exception of the Marine Corps, each Component makes some use of contractor EDDs to project PLT. The Army uses them only if they increase the new PLT value. Navy and Air Force add 13-30 days to the contract EDDs for transportation and receipt processing time before using them in a computation. DLA uses the contract EDD for the first of two PLT update calculations; the second update uses the actual delivery date.

Defense contractors visited by the Study Team consider that the contract EDD is their lead time "of record" and that the ICPs should use that data to update PLTs. Since the contractor is legally obligated to meet the EDD, its use in PLT computation is valid, regardless of whether the EDD increases or decreases the new PLT value. As discussed in paragraph B.2., adding transportation and receipt processing time to the EDD is also valid in some cases.

CONCLUSION:

- DoD POLICY SHOULD REQUIRE THAT CONTRACT EDDs BE USED IN ADDITION TO ACTUAL DELIVERY OBSERVATIONS IN DETERMINING PLT BASED ON HISTORICAL INFORMATION.

2. Survey Quotes ^{3/}

Wide differences exist among the Components in the use of survey quotes. Some Components do not use quotes at all while others make regular requests for lead time quotes. This inconsistency also exists within Components where some ICPs use survey quotes and others do not. Among the ICPs visited, the frequency of quotes ranges from monthly to annually. Contractors stated that although annual submissions would be easier for them, semi-annual quotes would be more beneficial to DoD since they would allow earlier detection of market and production fluctuations. Contractors also emphasized that quotes on a quarterly or monthly basis would place too great a burden on industry and probably would not reflect significant lead time changes.

The Components' survey quote programs are limited in scope. The ALCs solicit PLT quotes for items projected to be procured during the budget year, excluding those with procurement actions in process or completed in the last six months. The reason for the exclusion is that the EDD of the procurement action in process is still considered a valid quote of PLT. Sole source and most recent contractors are solicited for quotes. Troop Support and Aviation Readiness Command (TSARCOM), Defense Industrial Supply Center (DISC), and Aviation Supply Office (ASO) solicit quotes from selected contractors. At all of these ICPs, contractors submitting PLT quotes which are determined to be consistently unreliable are deleted from the future survey lists.

^{3/} For the purpose of this report, the periodic receipt of lead time information from contractors, outside the normal solicitation process, is referred to as a survey quote program.

Survey quotes are subject to review by the ICPs prior to use. At ASO, if quotes fall within prescribed parameters, one month is added for transportation and receipt processing time and the quote overlays the PLT in the file. IMs review PLT quotes falling outside the parameters and decide whether to use them. If quotes are received from more than one contractor, ASO uses the PLT quoted by the prime contractor. DISC IMs check the quotes against item histories before updating the PLTs. If multiple quotes are received for an item, a simple average is used. At the ALCs the IMs review survey quotes and, if realistic, add 15 days transportation time before updating the PLT. TSARCOM's system searches the survey quotes for part number/NSN matches and provides a listing to the IMs. The IMs review the quotes and compare them with history; they generally refuse to accept a PLT decrease, especially a significant decrease. For contractors whose quotes have proven reliable, they input the PLT quotes without manual IM review, unless the PLT decreases by three months or more. For those with decreases exceeding three months, TSARCOM IMs validate the PLT with their point of contact at the contractor's plant before updating the file.

Most of the Defense contractors contacted by the Study Team use lead time quotes from their vendors and subcontractors to develop lead time data. These contractors believe that valid quotes are far superior to historical data because quotes reflect current market conditions, whereas historically based projections of PLT tend to dilute the fluctuations in the economy.

The concept of soliciting contractor quotes of lead time is appealing, particularly in those cases where an item has no recent procurement history. Contractors can be a valuable source of lead time information. However, the current practice of using only survey quotes that increase PLT degrades the value of such a program. If contractor information is considered valid, survey quotes should be used whether they represent increases or decreases to PLT.

In establishing a survey quote program, the Components should consider that those contractors currently providing survey quotes do so at no direct cost to the U.S. Government and with no promise of future orders. However, there is a cost to the contractors to develop the information. Requiring the PLT data in specific formats, too frequently, or for excessive numbers of items could impose an unreasonable burden on the contractors. Most contractors said they are willing to furnish the quotes on a semiannual basis if the requests are for a limited number of items. One way to do this would be to limit the survey to those high dollar value items which the buy stratification projects will be procured over the next year. Consideration might also be given to obtaining quotes from those contractors receiving the largest

dollar value of ICP expenditures. As an incentive for contractors to participate in such a program, DoD should provide contractors the projected buy quantities for the next year. The Air Force's "Production Lead Time Survey," designed to solicit PLT quotes from sole source and recent contractors identifies the items projected for procurement during the budget year. Even though there is no promise of an order, the contractors indicated that such advance notification of expected buy quantities assists them in their planning processes, thus making this a two-way sharing of information.

CONCLUSIONS:

- DoD POLICY SHOULD REQUIRE THAT PLT BE DETERMINED USING CONTRACTOR-FURNISHED LEAD TIME QUOTES WHEN SUCH QUOTES ARE CONSIDERED RELIABLE. OTHERWISE, PLT SHOULD BE BASED ON HISTORICAL INFORMATION.
- LEAD TIME QUOTES SHOULD BE REQUESTED FROM CONTRACTORS BY MEANS OF A SEMIANNUAL SURVEY. QUOTES SHOULD BE RESTRICTED TO HIGH DOLLAR VALUE ITEMS PROJECTED TO BE PROCURED IN THE NEXT YEAR.
- AS AN INCENTIVE FOR CONTRACTORS TO PROVIDE PERIODIC LEAD TIME QUOTES, DoD COMPONENTS SHOULD PROVIDE INTERESTED CONTRACTORS WITH PLANNED PROCUREMENTS FROM THE BUY STRATIFICATION.

3. Evaluation Processes Lacking

Determining the reliability of contractor lead time quotes is a tedious process, because the DoD Components do not have systems that track or monitor contractor performance against survey quotes. The Study Team found several examples where one major Defense contractor quoted lead times which the ICPs used in their requirements computation only to have that contractor consistently deliver much earlier than quoted. In one case, a PLT quote of 14 months is being used by an ICP for requirements computation purposes even though each of the last three procurements was delivered in less than five months.

The Naval Sea Systems Command Shipbuilding Support Office (NAVSHIPSO) provides a good example of how the program should function to assure that the best available information is used for projecting lead time. NAVSHIPSO develops manufacturing lead time forecasts for component parts and basic materials. They do so by soliciting quotes from manufacturers and comparing the responses to those of other manufacturers. A history file of contractor performance is maintained and used to check the validity of future quotes.

To ascertain the reliability of contractor-furnished lead time quotes, the Components need to build a history file of contractor quotes and have an automated system to track actual performance against the quotes and adjust future quotes based on actual experience. If several contractors quote on an item, the quote of the primary contractor i.e., sole source or most recent,

might be used, or those which appear out-of-line can be questioned, and an average of the credible quotes can be used. This would also be a good method for checking the validity of quotes from first-time contractors.

CONCLUSIONS:

- DoD POLICY SHOULD REQUIRE COMPONENTS TO MAINTAIN A HISTORY OF LEAD TIME QUOTES AND ACTUAL PERFORMANCE, BY CONTRACTOR, FOR USE IN SCREENING AND ADJUSTING FUTURE QUOTES OF PLT.

- DoD POLICY SHOULD REQUIRE THAT WHEN MULTIPLE LEAD TIME QUOTES ARE RECEIVED AND VALIDATED, COMPONENTS SHOULD USE THE QUOTE OF THE PRIMARY CONTRACTOR OR DEVELOP A COMPOSITE AVERAGE OF PLT QUOTES FROM ALL CONTRACTORS.

E. GENERIC CODING

1. Origin. The concept of generic coding was initiated by TSARCOM in 1980 to improve the management of PLTs. Under the concept, items would be coded by their material content, manufacturing processes, and components. By using trade publications and Commerce Department data, and interviewing contractors, TSARCOM personnel plan to monitor changes in the generic categories. Whenever a significant change occurs, the coding system could be used to identify items in that generic category, and lead times could be reviewed and adjusted as needed.

2. Independent DoD Efforts. Varying levels of effort are being expended by the DoD Components toward development of a generic coding system. Since first initiating the concept, TSARCOM has made significant progress toward developing a detailed coding structure. Air Force Logistics Command (AFLC) conducted a comprehensive study of the TSARCOM concept, adjusted it to their needs, and coordinated it with the ALCs. Sensing the potential benefit of generic coding, DLA has recently developed plans to study the concept. DISC employs a market analyst who researches industrial trade journals to obtain information for updating lead times. The Navy and Marine Corps did not have plans to study the concept at the time of the Study Team visits. However, NAVSHIPSO personnel perform many of the functions, related solely to shipbuilding, that would be required in the market analysis and industrial capability aspects of a generic coding system (see Related Sources, Appendix F).

3. Contractors' Use. Some contractors use generic coding to monitor market conditions for raw materials, major manufacturing processes and components of items they manufacture. As market conditions change, the lead times are adjusted accordingly. The TSARCOM study found that many contractors are managing either by commodity coding (material content) or generic coding (manufacturing process and component parts as well as material content). The contractors cautioned that, if DoD moves toward development of a generic coding system, it should be one whose update is manageable.

4. Potential Use/Benefits

A generic coding system, coupled with some form of market analysis, could potentially provide the basis for early warning of significant changes in the lead times of such things as raw materials, major manufacturing processes and foreign source items. With this early warning, lead times could be adjusted and timely procurement actions could be accomplished to preclude critical item shortages.

Lead time averages could be developed by generic category and furnished to the Services and DLA Headquarters elements as well as OSD. The ICPs could also compare the averages to contractor quotes for items in the same generic category. Those quotes that are outside acceptable parameters could be questioned. Such a comparison could be made for quotes obtained either during an actual solicitation or from a periodic survey. If, as a result of Headquarters/OSD review, the lead times of a particular ICP appear out of line with overall Defense or market averages, actions could be initiated to resolve the differences.

CONCLUSION:

- A GENERIC CODING SYSTEM, COMBINED WITH ANALYSIS OF MARKET CONDITIONS, POTENTIALLY CAN PROVIDE EARLY WARNING OF SIGNIFICANT CHANGES IN THE LEAD TIMES OF RAW MATERIALS, MAJOR MANUFACTURING PROCESSES AND FOREIGN SOURCE ITEMS.

F. MONITORING THE ACCURACY OF LEAD TIMES

The Study Team found that not all DoD Components conduct periodic reviews of their ICPs' supply management operations. Even when these are performed, it is questionable whether they have been effective. As an example, the Air Force conducts regular reviews of their ALCs to include review of lead times, but the findings of both GAO and the Study Team indicate that lead times are inaccurate for many items. The Navy also conducts periodic supply management reviews. DLA conducts reviews, but only on a four-year cycle. The Army has only recently reinstituted reviews on a periodic basis. The Marine Corps does not currently conduct reviews.

CONCLUSION:

- COMPONENT HEADQUARTERS ELEMENTS NEED TO CONDUCT PERIODIC SUPPLY MANAGEMENT REVIEWS TO PLACE INCREASED EMPHASIS ON THE ACCURACY OF LEAD TIMES AND THE ENFORCEMENT OF LEAD TIME POLICIES.

CHAPTER III

RECOMMENDATIONS

Based on the findings, analysis and conclusions presented in Chapter II, the following recommendations are offered:

RECOMMENDATION #1 - DoD POLICY

OASD(MI&L) SHOULD ESTABLISH DoD-WIDE POLICY ON PROCUREMENT LEAD TIME FOR SECONDARY ITEMS, TO INCLUDE THE FOLLOWING:

- a. DEFINITIONS AND GUIDELINES INCLUDED IN APPENDIX G OF THIS REPORT.
- b. WHEN MINIMUM OR MAXIMUM ALT OR PLT IS USED, A REALISTIC VALUE WILL BE ASSIGNED TO EXCLUDE UNUSUALLY LOW OR HIGH LEAD TIMES.
- c. WHEN THERE ARE NO RELIABLE CONTRACTOR QUOTES OR HISTORICAL INFORMATION, DEFAULT VALUES MAY BE USED FOR LEAD TIMES. A DEFAULT VALUE WILL BE ASSIGNED ON THE BASIS OF SPECIFIC PROCUREMENT CHARACTERISTICS, E.G., COST, TYPE PROCUREMENT INSTRUMENT USED, RAW MATERIAL, OR MANUFACTURING PROCESS.
- d. CONTRACT EDDs OF REPRESENTATIVE PROCUREMENTS WILL BE USED IN ADDITION TO ACTUAL DELIVERY OBSERVATIONS WHEN PLT DETERMINATION IS BASED ON HISTORICAL INFORMATION.
- e. FOR HIGH DOLLAR VALUE SECONDARY ITEMS PROJECTED TO BE PROCURED IN THE NEXT YEAR, PLT QUOTES WILL BE REQUESTED FROM CONTRACTORS THROUGH SEMIANNUAL SURVEYS. PROJECTED PROCUREMENT INFORMATION FROM THE BUY STRATIFICATION SHOULD BE PROVIDED TO INTERESTED SURVEY CONTRACTORS AS AN INCENTIVE TO PARTICIPATE.
- f. HISTORY OF PLT QUOTES AND ACTUAL PERFORMANCE WILL BE MAINTAINED, BY CONTRACTOR. NEW PLT QUOTES WILL BE COMPARED TO HISTORY AND ADJUSTED WHEN NECESSARY.
- g. WHEN MULTIPLE QUOTES ARE RECEIVED FOR AN ITEM, THE QUOTE OF THE PRIMARY CONTRACTOR (I.E., SOLE SOURCE OR MOST RECENT) WILL BE USED IF CONSIDERED VALID. IF A PRIMARY CONTRACTOR QUOTE IS INVALID OR UNAVAILABLE, A COMPOSITE AVERAGE OF OTHER VALID QUOTES WILL BE USED.
- h. HEADQUARTERS ELEMENTS WILL CONDUCT PERIODIC SUPPLY MANAGEMENT REVIEWS OF THE ICPs TO INCREASE EMPHASIS ON LEAD TIME ACCURACY AND ADHERENCE TO LEAD TIME POLICIES OUTLINED ABOVE.

RECOMMENDATION #2 - GENERIC CODING SYSTEM

OASD(MI&L) SHOULD SPONSOR AN EFFORT TO EVALUATE THE USE OF A GENERIC CODING SYSTEM, IN CONJUNCTION WITH MARKET ANALYSIS, AS A MEANS OF ALERTING THE COMPONENTS TO IMPENDING SIGNIFICANT LEAD TIME CHANGES.

APPENDIX A



MANPOWER
RESERVE AFFAIRS
AND LOGISTICS

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON D C 20301

12 AUG 1993

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE ARMY (IL&FM)
ASSISTANT SECRETARY OF THE NAVY (S&L)
ASSISTANT SECRETARY OF THE AIR FORCE (RD&L)
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Secondary Item Procurement Lead Time Study

A recent report by the General Accounting Office (GAO) states that excessive production lead times are being used by the Air Force in their requirements determination process, thus leading to overstated requirements and less than optimum use of available funding for secondary items. The report is critical of the Air Force for using historical information, in lieu of available contractor quotes, as the basis for the determination of production lead times.

While the report addresses only the Air Force, it is evident that lead time problems exist throughout the DoD community. Currently, there is no standard DoD policy governing the determination of either the production lead time, addressed by the GAO report, or the administrative lead time which, together, comprise the procurement lead time.

To address the concerns of GAO and to improve DoD-wide use of lead time segments in the materiel requirements process, I have tasked the Logistics Systems Analysis Office (LSAO) to conduct a study that would provide proposals for a standard DoD policy on the determination of procurement lead time. A plan for the study is enclosed.

In order to achieve the objectives of the procurement lead time study as well as the specifics contained in the enclosed plan, your cooperation and full support of the LSAO study tasking are necessary. Each of you is requested to designate a staff point of contact for the study effort and notify the LSAO Study Director, Mr. Charles H. Ferguson, Commercial 703-756-2315 or Autovon 289-2315, within two weeks of the date of this memorandum. In addition, each point of contact should arrange an appropriate headquarters level briefing, to be conducted within three weeks of the date of this memorandum, that will acquaint the study team with your policies and procedures governing the determination of procurement lead time.

Enclosure
As stated

K. D. Webster
K. D. Webster
Deputy Assistant Secretary of Defense
(Logistics and Materiel Management)



MANPOWER,
RESERVE AFFAIRS
AND LOGISTICS

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

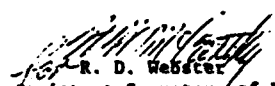
12 AUG 1983

MEMORANDUM FOR THE DIRECTOR, LOGISTICS SYSTEMS ANALYSIS OFFICE

SUBJECT: Project Assignment 83-9

I request that the Logistics Systems Analysis Office undertake a Secondary Item Procurement Lead Time study as outlined in the enclosed study plan.

Please advise me promptly if you foresee a need to modify the level of effort, schedule, or any other substantive aspects of the study plan.


R. D. Webster
Deputy Assistant Secretary of Defense
(Logistics and Materiel Management)

Enclosure a/s

PROJECT 83-9
STUDY PLAN

I. TITLE: Secondary Item Procurement Lead Time Study

II. BACKGROUND:

Currently, there is no standard policy governing the determination of procurement lead time for secondary items. As a result, various methods are used by the DoD Components to project the administrative and production portions of the procurement lead time that is used for the requirements computation process. There is also a lack of criteria for when contractor quotes should be used, in lieu of historical data, as the basis for lead time projections. A recent GAO report indicates that excessive lead times are being used by the Components in the requirements computation process, thus leading to overstated requirements and less effective use of the available funding for secondary items.

III. STUDY DESCRIPTION

A. Purpose. The Study will develop proposed statements of DoD-wide policy for the determination of procurement lead time for secondary items.

B. Objectives. The objectives of the study are to:

1. Review current DoD Component and selected industry practices for determining procurement lead times for secondary items.
2. Develop standard criteria, in the form of proposed statements of DoD policy, for the determination of realistic procurement lead times for secondary items.

C. Approach

1. Review current DoD policies for the determination of procurement lead time, including Defense Acquisition Regulations, DoD policy issuances and Component regulations and practices.
2. Review selected industry practices for determining procurement lead time. This will involve a review of how industry measures the lead time quoted to DoD as well as how they internally project lead time when dealing with sub-contractors.
3. Develop proposals for a DoD policy on procurement lead time for secondary items, to include:
 - a. Defining conditions when historical information will provide the basis for the determination of procurement lead-time.
 - b. Defining the criteria for what constitutes a representative procurement.

c. Defining the time frames to be used in the computation of lead time, including a logical segmentation of lead time.

d. Identify conditions that should be present for contractor quotes to be used for lead time projections.

IV. RESPONSIBILITIES

A. Study Sponsor. The Director for Supply Management Policy, OASD(MRA&L), is the Study Sponsor and is responsible for:

1. Study definition and scope.
2. Establishment of objectives.
3. Monitoring progress.
4. Receipt, coordination, and implementation of study results.

B. Study Agent. The Logistics Systems Analysis Office (LSAO) is responsible for the conduct of the study and will:

1. Determine and program resources required to accomplish the study.
2. Develop the detailed study approach and methodology, and identify, collect, obtain or develop data/information and techniques for accomplishment of study objectives.
3. The Study Team will be responsible for the following study products:
 - a. In-Process Reviews with the Study Manager.
 - b. Preliminary Briefing to the Study Sponsor.
 - c. Final Report.
 - d. Executive Briefings to OASD(MRA&L) and DoD Component Interested Officials.

C. DoD Components

The Military Services and DLA are responsible for:

1. Providing briefings, data, and information as requested by the Study Team.
2. Arranging for field research visits as requested by the Study Team.
3. Designating a single point of contact to coordinate Study Team requirements within the Component.

V. ADMINISTRATION

A. Staffing

1. Study Manager. The OSD Project Officer for this study is Mr. John Jivatode, OASD(MRA&L)SR.

2. Study Director. The Study Team Director is Mr. Charles Ferguson, LSAO, AUTOVON 289-2315; Commercial (703) 756-2315.

3. Study Team Composition. To be provided by LSAO.

4. Level of Effort. LSAO will not expend more than 21 direct staff-months on this study without expressed approval of DASD(L&MM).

B. Contact Points. Each of the Military Services will designate a point of contact. The point of contact should have the authority and responsibility for providing the Study Team with the required support, briefings, data documents, and visit coordination. The name of the individual designated as the point of contact should be provided directly to LSAO within two weeks after the date of the memorandum transmitting the Study Plan. Notification to LSAO should be made by telephone at 703/756-2315 or AUTOVON 289-2315 and confirmed in writing.

C. Schedule

1. The Study Agent will develop a schedule for the accomplishment of the study in accordance with the assignment.

2. Upon receipt of the study requirement and after the organization and staffing of the Study Team, the study completion time is estimated to be seven months.

3. The Study Agent will notify the Study Sponsor of events that impact the assignment or schedule on an exception basis. Changes to the assignment or schedule will be proposed to the DASD(L&MM) by the Study Sponsor, where warranted. The DASD(L&MM) will approve any such changes prior to their implementation.

D. Study Completion. The study will be completed by the submission of the specified products to the Study Sponsor. However, during the course of the survey, the Study Agent may uncover specific factors or unforeseen problems which when considered raise the question of the value of pursuing the study to completion. In those instances where the Study agent believes a cessation of efforts is appropriate, a recommendation with supporting justification will be provided to the Study Sponsor for decision. The Study Sponsor may terminate the study based on the Agent's recommendations, or for other reasons at any time. The termination will be confirmed in writing.

APPENDIX B
FIELD RESEARCH SITES

ARMY

Office of the Deputy Chief of Staff for Logistics,
Washington, DC
HQ, U.S. Army Materiel Development and Readiness Command,
Alexandria, Virginia
U.S. Army Troop Support and Aviation Materiel Readiness
Command, St. Louis, Missouri
Automated Logistics Management Systems Activity, St. Louis,
Missouri
U.S. Army Inventory Research Office, Philadelphia,
Pennsylvania
U.S. Army Plant Representative Office, Hughes Helicopters,
Inc., Culver City, California
U.S. Army Plant Representative Office, Bell Helicopter
Textron Corp., Fort Worth, Texas

NAVY

Office of the Chief of Naval Operations, Washington, DC
HQ Naval Supply Systems Command, Washington, DC
Fleet Material Support Office, Mechanicsburg, Pennsylvania
Ships Parts Control Center, Mechanicsburg, Pennsylvania
Aviation Supply Office, Philadelphia, Pennsylvania
NAVSEA Shipbuilding Support Office, Philadelphia,
Pennsylvania

AIR FORCE

Office of the Deputy Chief of Staff, Logistics and
Engineering, Washington, DC
HQ, Air Force Logistics Command, Dayton, Ohio
San Antonio Air Logistics Center, San Antonio, Texas
U.S. Air Force Plant Representative Office Northrop,
Hawthorne, California

MARINE CORPS

HQ, United States Marine Corps, Rosslyn, Virginia
Marine Corps Logistics Base, Albany, Georgia

DEFENSE LOGISTICS AGENCY

HQ, Defense Logistics Agency, Alexandria, Virginia
Defense Construction Supply Center, Columbus, Ohio
Defense Industrial Supply Center, Philadelphia, Pennsylvania
DLA Systems Automation Center, Columbus, Ohio
Defense Contract Administration Services Region, Boston,
Massachusetts

DEFENSE LOGISTICS AGENCY (Cont'd)

Defense Contract Administration Services Region, Dallas,
Texas
Defense Contract Administration Services Region, Los Angeles,
California
Defense Contract Administration Services Region,
Philadelphia, Pennsylvania
Defense Contract Administration Services Region, St. Louis,
Missouri

DEFENSE CONTRACTORS

Airesearch Manufacturing Co., Torrance, California
Bell Helicopter Textron Corp., Fort Worth, Texas
General Electric Corp., Lynn, Massachusetts
GTE Communication Products Corp., Needham, Massachusetts
Hi-Shear Corp., Torrance, California
Hughes Helicopters, Inc., Culver City, California
Industrial Design Laboratories, Inc., Culver City,
California
ITT Gilfillan, Van Nuys, California
McDonnell Aircraft Co., St. Louis, Missouri
Northrop Corp., Hawthorne, California
Texas Instruments, Dallas, Texas
Titan Industries, South Gate, California
Varian Associates, Beverly Division, Beverly, Massachusetts

APPENDIX C

CURRENT DOD POLICIES AND PRACTICES

A. INTRODUCTION

This appendix describes the current policies and practices of DoD Components related to secondary item procurement lead time.

B. ARMY

1. Segmentation of Lead Time. The Army's standard whole-sale supply system, known as the Commodity Command Standard System (CCSS), divides procurement lead time into two major time segments: ALT and PLT.

a. Administrative Lead Time (see Figure C-1). According to Army Regulation 710-1, Centralized Inventory Management of the Army Supply System, ALT begins on the date the Procurement Work Directive (PWD) is generated. "PWD" is synonymous with "Purchase Request" (PR). Its generation signals that a recommended procurement is approved and the administrative process of placing the order begins. In CCSS, the PWD may be issued automatically when a recommended procurement does not exceed a specified dollar value. In this instance, an Inventory Manager (IM) review is not required. When the dollar value exceeds the specified amount, or the procurement is coded for manual review, the IM reviews the recommended procurement. If the procurement is approved, the IM initiates action to generate the PWD. Whether the PWD is generated automatically or as a result of an IM's review, its generation is the beginning of ALT. The end of ALT is the date when the contract is signed. The period of time between the date when the item's reorder point (ROP) is reached and the date when the PWD is generated is not included in ALT.

SEGMENTATION OF ALT - ARMY

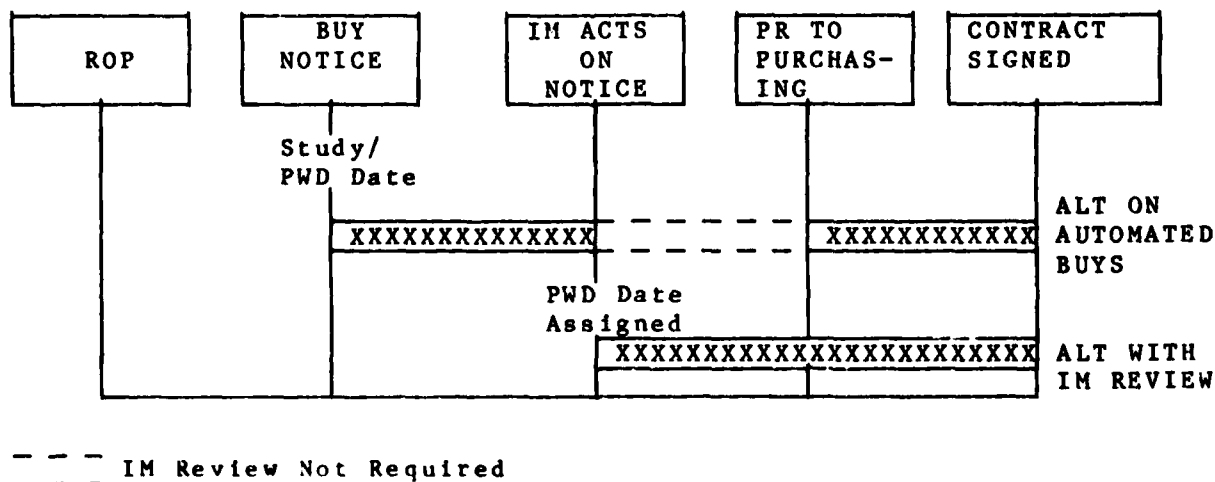


Figure C-1

b. Production Lead Time (see Figure C-2). Army Regulation 710-1 defines the beginning of PLT as the date of the contract, which is when the contract is signed. The ending event of PLT is defined as the date of receipt of the first significant delivery. Significant delivery is defined by the Army as that which consists of a quantity equal to, or greater than one third of the total PWD quantity or procurement subline value, as applicable. CCSS computes the date of receipt of the significant delivery by adding 15 days for transportation and receipt processing time to the contractor's ship date.

SEGMENTATION OF PLT - ARMY

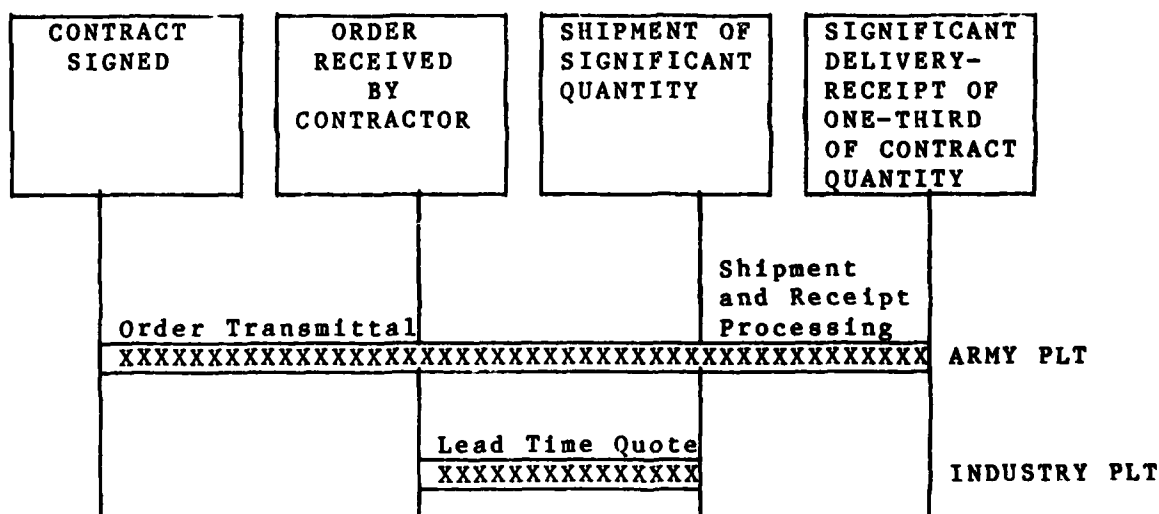


Figure C-2

2. Use of Historical Information in Determining Procurement Lead Time

a. Representative Procurements. Only those procurements which are considered representative are used in historically-based lead time determinations. Nonrepresentative actions such as urgent bids, direct delivery orders, and extended administrative delays for technical data packages, reproduction and funding are excluded from the determination of ALT. Similarly, nonrepresentative PLT actions such as expedited deliveries and extended delays due to litigation, strikes and natural disasters are not included in PLT determination. In CCSS, the ALT and PLT portions of the procurement action are separately coded to identify each as representative or nonrepresentative. This permits automatic selection of representative actions in the lead time determination.

b. Parameters. The CCSS Materiel Management Decision (MMD) file provides a method for establishing a minimum procurement lead time. It also allows ICPs to set maximum ALTs depending on the type of procurement, e.g., Blanket Ordering Agreement (BOA) or Requirements Type Buy.

c. Defaults. CCSS assigns default values of one month and three months for ALT and PLT respectively when no other values exist.

d. Manual Overrides. The values of ALT and PLT in the CCSS header record can be manually overridden. This is done by what is referred to as a "freeze" characteristic. Lead time values, as well as other key elements, can be frozen for a period of up to one year. At TSARCOM, both IMs and procurement personnel can override the ALT and PLT. This means that the lead time values are not subject to automatic change during the freeze period. In addition, when a lead time value is frozen, the minimums and maximums in the MMD file do not apply.

e. Other Features. Army ICPs also use the Procurement Automated Data Document System (PADDS), which replaced the manual preparation of some routine contracting systems documents, such as solicitations and awards. At TSARCOM, it is estimated that the use of PADDS reduces ALT by about seven days. To reduce PLT, TSARCOM personnel have proposed to Headquarters, Department of Army Materiel Development and Readiness Command (HQ DARCOM) that positioning PADDS printers in selected contractors' facilities could eliminate about seven days' contract mailing time.

f. Forecasting Technique. In the case of ALT, a forecast is developed by taking a simple average of all representative ALTs over the past 24-month period. For commodities other than aircraft, the forecast of PLT is also a simple average of all representative PLTs experienced over the past 24 months. The PLT forecast for aviation items is the last representative PLT, provided it occurred during the past 36 months. If there is no representative PLT during that period, a representative PLT for a similar item may be used or the IM may request that the procurement office contact the manufacturer(s) for a current estimate. Although CCSS retains 36 months of procurement history, lead time forecasts associated with that history are continually replaced by the most recent value of ALT or PLT.

3. Use of Contractor Information in Determining Procurement Lead Time

a. Contract EDDs. Two PLT values are actually recorded in the CCSS records; one is based on a contract EDD and the other represents the PLT computed as a result of the first significant delivery. Representative PLTs based on contract EDDs are used in the PLT forecasting process only if the estimates increase the PLT forecast.

b. Survey Quotes. To a limited extent, Army ICPs periodically request quotes of PLT from contractors. TSARCOM has a PLT Tape Program whereby quotes are obtained for sole source items. At the time of the field research visit, there were six contractors providing PLT quotes semiannually at no direct charge to the U.S. Government. If, as a result of manual review, the data appears questionable, contract administration personnel query the contractor in an attempt to validate the data. If the contractor cannot support the data, it will not be used. Some IMs indicated adherence to an unwritten rule that only contractor quotes which increase the PLT should be used. There is no formal system for comparing actual delivery times to the contractors' quotes for the purpose of adjusting future quotes of lead time.

4. Use of Market Indicators in Monitoring Fluctuations in Lead Time

a. In 1980, TSARCOM proposed to HQ DARCOM the use of a generic coding concept to improve the management of PLTs. TSARCOM's idea was to code items by their material content, e.g., titanium and cobalt; manufacturing processes, e.g., forging and casting; and components, e.g., bearings and hydraulic actuators. Through the use of industrial trade publications, Commerce Department data, and interviews with contractors, ICP personnel would be able to monitor changes in the generic categories. Whenever a significant change occurs, the system could identify the items in that generic category and lead times could be reviewed and adjusted, if appropriate.

b. TSARCOM coordinated the generic coding concept with the other Army ICPs and in 1981 the concept was referred to the U.S. Army Materiel Systems Analysis Activity's Logistics Studies Office (LSO), for review. LSO concluded in 1982 that the generic coding concept was feasible and recommended testing and evaluation of the concept at TSARCOM prior to system-wide implementation. The TSARCOM reorganization has caused a temporary suspension of the evaluation, and an estimated completion date has not been determined.

5. Headquarters Reviews of ICP Lead Times. HQ DARCOM has recently reinstituted periodic visits to its ICPs to review products of the Requirements Determination and Execution System, which are influenced by lead times and other factors.

C. NAVY

1. Segmentation of Lead Time. The Navy Uniform Inventory Control Program (UICP) includes entries for procurement lead time and PLT. ALT is the difference between the two.

a. Administrative Lead Time (see Figure C-3)

The Basic Inventory Manager's Manual defines ALT as the time it takes to award a contract, measured from the time the need for procurement is initially established. The date of the PR assignment is the beginning event of ALT. In the UICP, the Supply Demand Review (SDR) is run weekly for consumable items and monthly for reparable items. The SDR establishes the buy recommendation date, and the automated purchase operation assigns a PR number. When processed in the automated system, the buy recommendation date and the PR date are the same. If a manual review of the buy recommendation is required, the PR is assigned upon completion of the review, and the ALT begins at that time. When a contract is awarded, the date of award is established in the Master Data File (MDF). This marks the end of ALT. Segments of time excluded from ALT are:

- The period between the date the ROP is reached and the date the SDR produces the buy recommendation, and
- When IM review is required, the period from the date of the buy recommendation to the PR date. The PR date overlays the buy recommendation date and the intervening time for IM review is not captured.

Since the SDR is run weekly for consumable items and monthly for reparable items, the time lost between the ROP and generation of the SDR can average one-half week and two weeks respectively. Add to this the excluded time between the SDR (buy recommendation date) and the PR date when items are manually reviewed and the total excluded time could approach four weeks.

SEGMENTATION OF ALT - NAVY

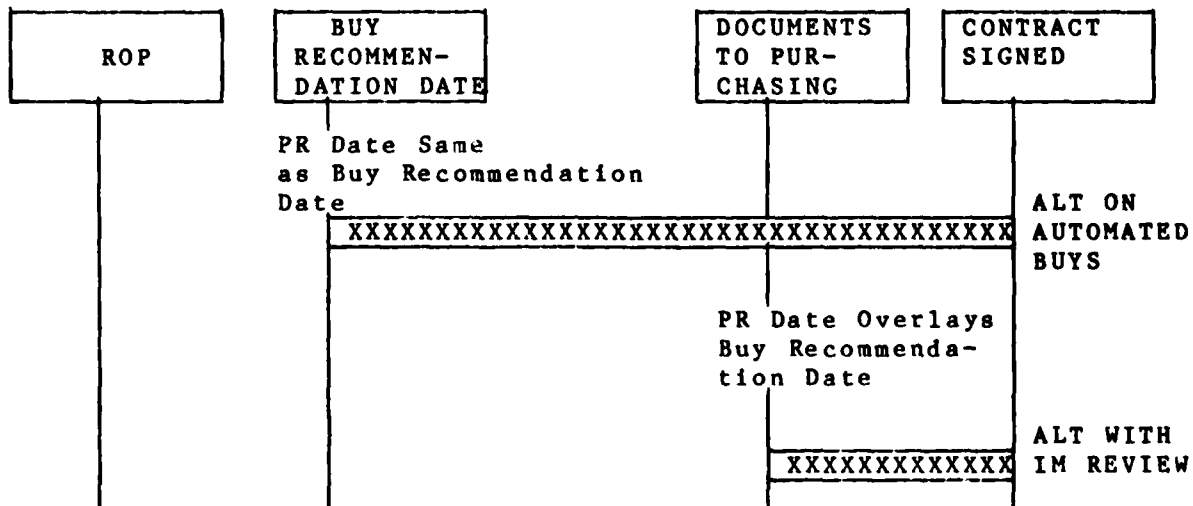


Figure C-3

b. Production Lead Time (see Figure C-4)

The Basic Inventory Manager's Manual defines PLT as the expected span of time between the date of the award of the procurement and the aggregate average time of first receipt at all stock points in the distribution system. For items shipped to only one stock point, PLT ends when that stock point sends notification of its first receipt. In cases where deliveries are scheduled to multiple stock points, the lead time is computed after initial deliveries have been made to each stock point. The average time of first receipts for all stock points is then used for computation. The IM may choose to override this procedure. For manual processing at ASO, the PLT represents the period from contract award to the lesser of the time when stock shipments equal monthly demand, or when 25% of the ordered quantity has been delivered. Thus, one month is added for intransit time, including the condition when the stock has already been received.

The Fleet Material Support Office (FMSO) is conducting a study titled "The Effects of Multiple Deliveries on Procurement Leadtimes" which is scheduled for completion in August 1984. Navy officials believe this study will affect the current Navy policy of ending PLT with delivery of the first item.

Contractor estimates of lead time do not include in-transit time. FMSO personnel stated that an SPCC-unique program adds 13 days to contractor estimates to allow for transportation and receipt processing. When performing manual reviews, some IMs also add time for transportation and receipt processing. This added time usually ranges from 13 days to one month.

SEGMENTATION OF PLT - NAVY

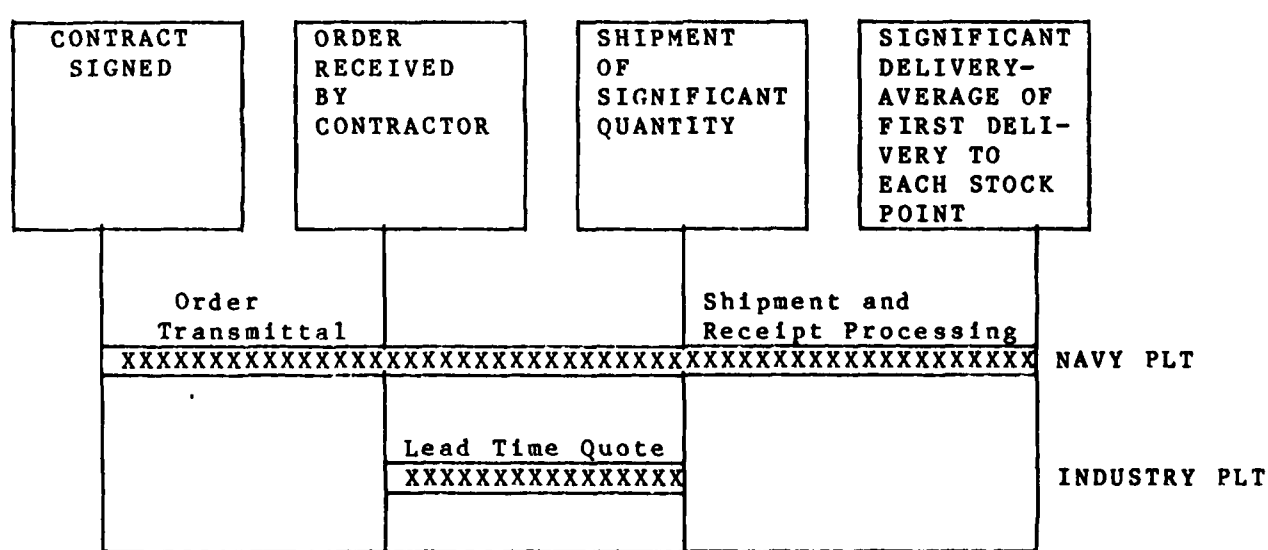


Figure C-4

2. Use of Historical Information in Determining Procurement Lead Time

a. Representative Procurements. The Basic Inventory Manager's Manual states that, in general, an unexpedited procurement action for stock is a representative procurement. If a procurement condition exists that is considered to be an unusual, one-time occurrence, it is excluded from lead time computations.

b. Parameters

At ASO, the UICP rejects for IM review lead time values greater than 200% or less than 75% of the previous forecast. At SPCC, items having lead time values greater than 200% or less than 50% of the previous forecast are rejected for IM review.

At ASO, ALT ceilings are established for manual lead time adjustments by dollar value and category of procurement. They range from one quarter for non-BOA contracts of less than \$10,000 to three quarters for contracts of more than \$100,000. No ALT ceilings were identified by SPCC personnel. The UICP constrains the PLT and procurement lead time to a maximum of 18 quarters. Lead time history is constrained to five years. Future ASO initiatives include the review of ALT ceilings on manual adjustments to determine if the limits should be removed and actual experience used instead.

c. Defaults. The default values assigned by Navy ICPs when there is no lead time history do not appear to be understood by all Navy personnel. To clarify the issue, a Naval Supply System Command (NAVSUPSYSCOM) representative provided the following information:

ASO assigns default values of:

PLT	4 quarters
Procurement lead time	5 quarters

SPCC assigns default values of:

PLT	5 quarters
Procurement lead time	
Consumable	6.7 quarters
Reparable	7.0 quarters

d. Manual Overrides. Manual adjustments by the IM may be based on actual delivery experience, the contractual delivery schedule, or written contractor-furnished estimates. Indicators can be set to retain the old forecast, or the IM may choose to allow an observation to go into the history file and either be used in the new lead time forecast or excluded from the forecast. IMs initiate manual overrides in varying ways. As an example,

can be set to retain the old forecast, or the IM may choose to allow an observation to go into the history file and either be used in the new lead time forecast or excluded from the forecast. IMs initiate manual overrides in varying ways. As an example, one IM recomputes the data provided on the buy recommendation and does not discriminate by the age of the historical lead time data. Instead, the quantity is emphasized, i.e., if 80% of the total quantities received in the past were delivered in 4.4 quarters, that lead time is given a weight of 80% in his computation of lead time. The UICP does not indicate when a manual adjustment has been made.

e. Forecasting Technique

Exponential smoothing is used to forecast the lead times used by Navy ICPs. The Transaction Item Reporting (TIR) system accumulates lead time observations and calculations are made as receipts are matched to the contract. Cyclic Levels and Forecasting (CLF) utilizes the observations in the TIR for the quarterly averaging of PLT and procurement lead times. The cumulative observations and frequency data are used for computing new lead time forecasts. If no observations were experienced in the last cycle, the current forecast is retained.

The assignment of smoothing weights is a variable controlled by the ICP. ASO assigns equal weight to old and new observations but is reviewing this area to determine if more emphasis should be placed on the current observation. SPCC assigns a variable smoothing weight based on the age of the previous lead time observation. The more recent the observation, the more weight it receives in the lead time computation.

Although lead time history is retained for five years, the lead time averaging computation in UICP uses only observations recorded within the ten past quarters.

3. Use of Contractor Information in Determining Procurement Lead Time

a. Contract EDDs. The Navy ICPs basically follow MIL-STD-1552A, Uniform DoD Requirements For Provisioning Technical Documentation, which places the end of PLT for the contractor at shipment of the first deliverable quantity. However, ASO adds one month and SPCC 13 days to the contractors' EDD to allow for the time required for transportation and receipt processing of the materiel.

b. Survey Quotes

SPCC does not participate in a periodic survey quote program. Officials stated that such a program was tried in the past, but the contractor information was considered unreliable.

ASO solicits lead time quotes from selected contractors. Participating contractors provide the quotes at no direct cost to the U.S. Government. ASO currently receives survey quotes from 15 contractors, including seven of their top ten contractors. Contractor quotes are requested on a quarterly basis to permit inclusion in the quarterly lead time forecast update. If the contractor quotes meet established parameters, the file forecast of PLT is updated with the quote. If multiple quotes are received on an item, the prime contractor's quote is used. One month is added to the quotes to allow for transportation and receipt processing time. There is no procedure to track actual contractor performance against survey quotes.

4. Use of Market Indicators in Monitoring Fluctuations in Lead Time. The Navy does not have a generic coding program. On an exception basis, the IM adjusts lead times manually as a result of occurrences in the market place. However, the NAVSEA Shipbuilding Support Office (NAVSHIPSO), located at the Philadelphia Naval Shipyard, develops manufacturing lead time (MLT) forecasts. Their industrial surveys provide statistical data related to MLTs and production rates, and give an overall view of the industrial capabilities of manufacturers to support Navy shipbuilding and modernization programs. Manufacturer responses are compared with those from other manufacturers as well as their own actual performance. Widely differing quotes are questioned. NAVSHIPSO efforts are directed primarily to critical items, long lead time items, sole source, foreign source, and short supply items.

5. Headquarters Reviews of ICP Lead Times. HQ NAVSUPSYSCOM conducts semiannual stratification reviews of Navy ICPs. The team looks primarily at high dollar value items and each factor that affects the requirements computation process, including lead time.

D. AIR FORCE

1. Segmentation of Lead Time. Air Force divides procurement lead time into two major segments: ALT and PLT.

a. Administrative Lead Time (see Figure C-5)

The automated system for determining consumable item requirements (D062) identifies the beginning of ALT as the "as of date of buy notice." The automated system for determining repairable item requirements (D041) identifies the beginning of ALT as the date of the IM preparation of a PR or Military Interdepartmental Purchase Request (MIPR). For both consumable and repairable items, the end of ALT is the date of contract or purchase order award.

Both the D062 and D041 systems automatically receive the number of ALT days recorded in the Acquisition and Due-in System (J041). The J041 system monitors key events and dates in the contracting process. The J041 ALT represents the number of days between the date of the PR and the contract award. To the J041 ALT, the D062 system adds 14 to 30 days, varying by Supply Management Group Code. The added days represent the time lag between the D062 "as of date" and the print date, the time an IM is allowed for PR/MIPR preparation, and the time lag from the date the IM submits the PR/MIPR to the date J041 processes it.

For reparable, IMs add to the J041 ALT a period of seven days for approval of the buy computation and preparation of the acquisition document. The days added to the J041 ALT are considered standards and maximums. If the actual time exceeds the standard, the excess time is not included in ALT. In the D062 system, the "as of date" is a requirements computation cutoff date which occurs weekly or monthly, depending on the Supply Management Group Code of the item. If the ROP were breached during the period between one requirements computation and the next, the time between the breach occurrence and the next computation is not included in ALT. This could result in an average of one-half week to two weeks being excluded from the ALT. For the D041 system, requirements are computed on a quarterly basis which could result in an average of six weeks being excluded from the ALT. In addition, the time between the computation date and the IM preparation of the PR/MIPR is not included in ALT.

SEGMENTATION OF ALT - AIR FORCE

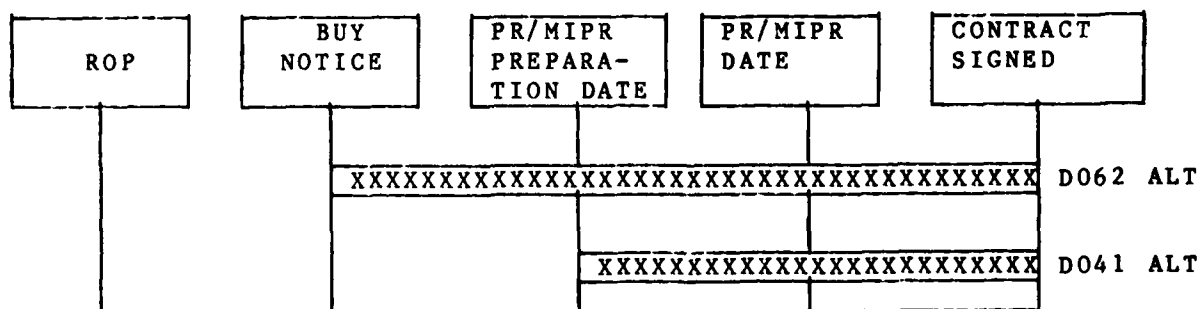


Figure C-5

b. Production Lead Time (see Figure C-6)

For both consumable and reparable items, PLT begins with the date of contract/purchase order award. The end of PLT for consumable items is identified as receipt of at least 10% of the total contract quantity, based on information from the latest routine contract.

The J041 system computes actual PLT and passes it to the D062 or D041 systems. If the PLT is based on a contract EDD, the system adds 15 days transportation time.

SEGMENTATION OF PLT - AIR FORCE

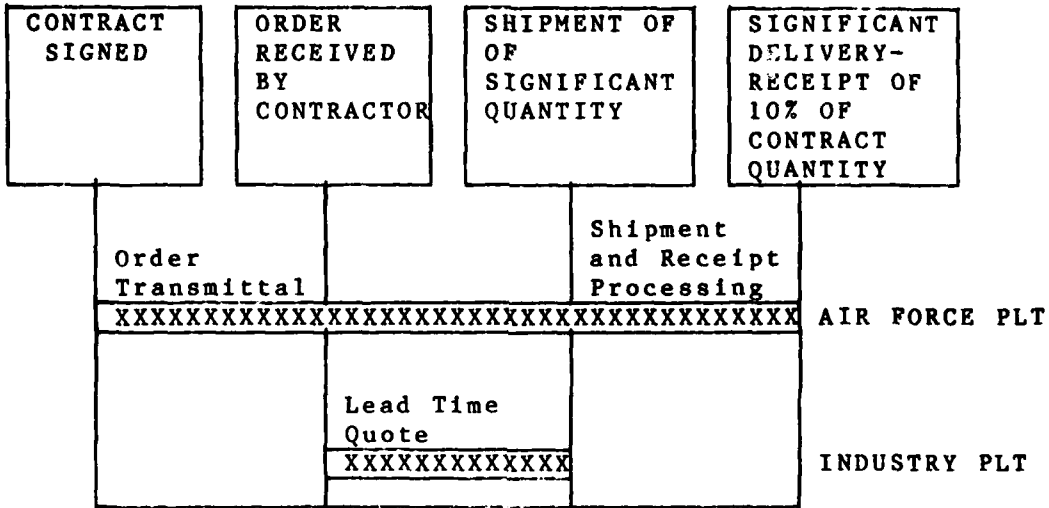


Figure C-6

2. Use of Historical Information in Determining Procurement Lead Time

a. Representative Procurements. The 13 May 1983 HQ AFLC guidance to the ALCs stresses the use of actual lead times in D062 only when they are based on routine contracting actions and are considered realistic. AFLC Regulation 57-4, Recoverable Consumption Item Requirements System (D041), indicates that for repairable items, the latest actual ALT should be used provided it was not processed on a delayed or expedited basis. For PLT, the Air Force guidance is to normally use actual data unless more current, realistic contractor quotes are available. The IM must use judgment in determining realistic PLTs, and may even consider unusual circumstances, disregarding those of a temporary nature.

b. Parameters

(1) Filters. In the D062 system, when an actual ALT or PLT is computed and varies from the previous value by 25% or more, the IM is notified on a computer report. No specific filters were identified for the D041 system, but IMs do receive periodic listings showing lead time changes.

(2) Minimums/Maximums. In the D062 system, the maximum ALT and PLT values are 365 days and 2,190 days, respectively; minimums are not prescribed. In the D041 system, the maximum ALT and PLT values are nine months and 99 months, respectively; however, the procurement lead time used by the D041 system for requirements computation cannot exceed 36 months. This conflict in the D041 values sometimes causes IMs to manually compute lead time requirements in excess of 36 months as additives. No minimums are prescribed.

c. Defaults. D062 assigns ALT/PLT values of 91 days/273 days to all new items. D041 defaults to ALT and PLT values of three months and nine months when no other information is available. If an ALT has not been experienced in the last five years, a matrix of values based on procurement instruments and major contractors is used to determine an appropriate default ALT. Lead times of similar items may also be used.

d. Manual Overrides. For both consumable and reparable items, the IMs may initiate manual changes to the file values of ALT and PLT. In the D062 system, an IM may code items to suppress automatic update of lead times from the J041 system; in these situations, manual file maintenance is required. The D041 system currently has no suppression feature, but this has been proposed for a future system change. The dates and reasons for all manual changes are to be documented by IMs on record cards.

e. Other Features. File values of ALT and PLT in D062 and D041 are coded to indicate whether the source of the value is a standard, an actual, an estimate, or is based on a quote or contract EDD.

f. Forecasting Technique. Only the latest representative procurement action is considered in forecasting ALT or PLT. If the latest action is deemed unrealistic, the value from the previous representative procurement action, an estimated value, or a system standard may be substituted. Although the J041 system retains 36 months of procurement history, the D062 and D041 systems have only a current value of ALT and PLT per item.

3. Use of Contractor Information in Determining Procurement Lead Time

a. Contract EDDs. As indicated in paragraph 1.b., the J041 system will automatically compute a PLT based on a contract EDD when such a PLT is based on the latest procurement action. J041 automatically adds 15 days transportation time to the PLT before passing the data to D062 or D041.

b. Survey Quotes. AFLC Regulation 84-4, Production Leadtime Acquisition, prescribes implementation of a semiautomated "Production Leadtime Survey." Generated from the requirements determination and procurement systems, the survey identifies consumable and reparable items projected to be procured during the budget year which do not have a procurement action in process or completed in the last six months. The survey is mailed by each ALC to sole source or most recent contractors to solicit current estimates of PLTs. Contractor participation is voluntary and provided at no cost to the U.S. Government. The Production Leadtime Survey is annual; it is normally run in March based upon the 31 December computation cycle. Some contractors voluntarily provide PLT data more frequently. Contractors are requested to annotate a computer-generated listing or provide their own format with current PLT data. IMs at the ALCs then review the contractors' quotes.

4. Use of Market Indicators and Monitoring Fluctuations in Lead Time

a. In April 1982, AFLC undertook a project to identify, by generic coding, items having common materials or manufacturing processes. The purpose of the coding is to permit the rapid update of system PLTs whenever there is a corresponding change in the availability of materials or time required for major manufacturing processes. It is AFLC's position that the concept should be considered for DoD-wide implementation.

b. The Joint Aeronautical/Materials Activity (JAMAC), located at Wright-Patterson Air Force Base, publishes a quarterly newsletter entitled "Material Lead Time Information." The JAMAC report lists average, low and high PLTs obtained from surveying major aerospace contractors. Lead times are presented for key materials and components of airframes, engines and electronics. The report is distributed not only to Air Force activities, but to other DoD Components and U.S. Government activities.

5. Headquarters Reviews of ICP Lead Times. HQ AFLC reviews the ALC's lead time values semiannually as part of their overall supply management reviews.

E. MARINE CORPS

1. Segmentation of Lead Time. The Marine Corps Logistics Base (MCLB) divides procurement lead time into ALT and PLT.

a. Administrative Lead Time (see Figure C-7). ALT begins with the assignment of a buy document date to a recommended procurement. During ALT, an IM prepares a PR, which is ultimately used by procurement personnel to prepare a contract. ALT ends with the date of issuance of a contract. MCLB personnel indicated that if a technical data package were not available, ALT would be suspended while the data was obtained. However, if more than one such suspension occurred on the same procurement action, the ALT would be considered nonrepresentative and not used in requirements determination. A segment of time preceding ALT, beginning at an item's ROP, and ending with the assignment of the buy document date, is excluded from ALT. Item review programs are run biweekly so that lost lead time should not exceed two weeks.

SEGMENTATION OF ALT - MARINE CORPS

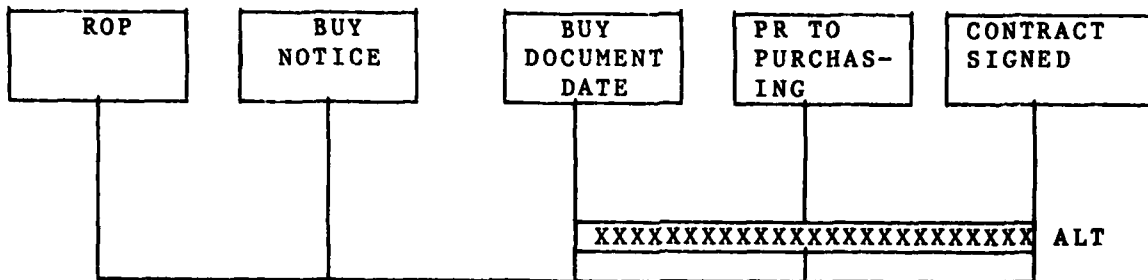


Figure C-7

b. Production Lead Time (see Figure C-8). PLT begins with the date of issuance of a contract. PLT ends with final receipt processing, when assets are posted to the automated Master Inventory File (MIF) as serviceable/issuable. The automated Marine Corps Uniform Materiel Management System (MUMMS) uses the delivery date as the end point for computing the value of PLT. IMs must then estimate and add to the MUMMS PLT value the number of days for receipt processing and posting.

SEGMENTATION OF PLT - MARINE CORPS

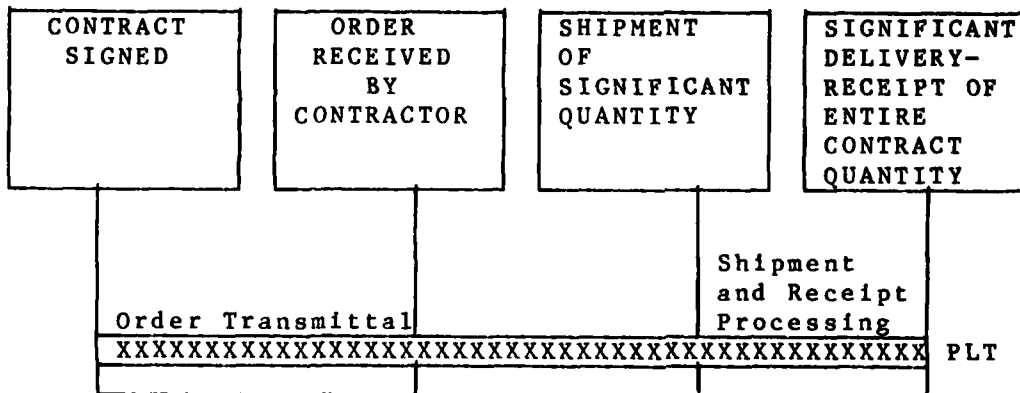


Figure C-8

2. Use of Historical Information in Determining Procurement Lead Time

a. Representative Procurements. Although the MUMMS procurement subsystem automatically measures procurement lead time, there is currently no means to code individual procurement actions as nonrepresentative. Consequently, an IM must review procurement lead times measured in MUMMS, relying on manual records or memory to determine which values are representative.

b. Parameters. MUMMS has no filters for alerting IMs to large changes in historical lead times. ALT/PLT values are not constrained by minimums or maximums in the MUMMS procurement subsystem. However, when the IM decides on the appropriate values of ALT and PLT to load into the MIF, neither value may exceed 999 days.

c. Defaults. IMs refer to a table of default values when assigning ALT and PLT to new items. The table specifies default values based on Management Echelon Code or Federal Supply Classification (FSC).

d. Manual Overrides. All lead time values in the MIF are input manually, whether they are based on historical data, the default table, or an IM's best estimate. IMs may initiate overrides to the file values at any time.

e. Forecasting Technique. The MUMMS procurement subsystem generates a report which shows for each NSN a maximum of five of the most recent procurement lead times over the current year plus three past years. The report displays a minimum, maximum and simple average for each item. IMs use this list in conjunction with their own manual records to determine the most representative values for ALT and PLT which are then input to the MIF. Although MUMMS has 36 months of procurement history, only the current forecast values of ALT and PLT are retained.

3. Use of Contractor Information in Determining Procurement Lead Time

a. Contract EDDs. EDDs are not used to update PLT values in the requirements determination process.

b. Survey Quotes. MCLB has no routine procedure for soliciting contractor quotes of PLT.

4. Use of Market Indicators in Monitoring Fluctuations in Lead Time. MCLB currently has no program to monitor trends in lead time through generic coding or market indicators.

5. Headquarters Reviews of ICP Lead Times. Headquarters, United States Marine Corps (HQ USMC) does not schedule periodic on-site reviews to the MCLB to review procurement lead times. Headquarters personnel stated that they do have some visibility of lead times through the numerous reports that the MCLB submits periodically. Also, the Navy audit team provides feedback to the HQ USMC when an audit focuses on procurement lead time or a related subject.

F. DEFENSE LOGISTICS AGENCY (DLA)

The Study Team selected the Defense Construction Supply Center (DCSC) and the Defense Industrial Supply Center (DISC) as representative field research sites for DLA hardware ICPs. Both DCSC and DISC use DLA's Standard Automated Materiel Management System (SAMMS).

1. Segmentation of Lead Time. SAMMS identifies two major segments of lead time: ALT and PLT.

a. Administrative Lead Time (see Figure C-9).

DLA considers ALT to be the interval between the supply control study generation date and the contract award date. Only representative stock replenishment procurements are considered in the determination of the ALT. For automated procurements, a supply control study is not printed; instead, a PR is automatically prepared. For procurements requiring IM review, a supply control study is produced containing supply management data. Contract award signals the end of ALT. When a manual review is required, ALT includes the time for the IM to review and process the supply control study. It also includes the time required to obtain any missing technical data and to award a contract or purchase order.

Procurement Administrative Lead Time (PALT) is a subset of ALT. It identifies the portion of ALT required for the contracting office to make the award. PALT begins one day after the PR date and ends when the contract is signed. The period of time from the date the ROP is reached to the generation of the supply control study is not counted in ALT. This period is usually one to three days, but can extend to as many as five days during month-end computer processing.

SEGMENTATION OF ALT - DLA

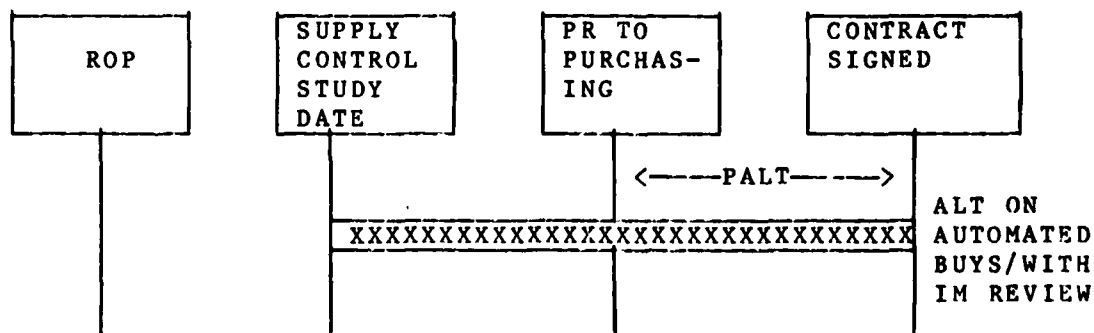


Figure C-9

b. Production Lead Time (see Figure C-10). Contract award signals the start of PLT. PLT ends with receipt of a significant delivery, which is 51% of the representative contract line item number (CLIN) recorded in SAMMS. If a contract has multiple delivery sites with a single delivery date for an item, the representative CLIN will be for the destination receiving the largest quantity. If there are multiple delivery dates consigned to multiple destinations, the representative CLIN will be the one with the earliest scheduled delivery date and the largest due-in quantity for that date.

SEGMENTATION OF PLT - DLA

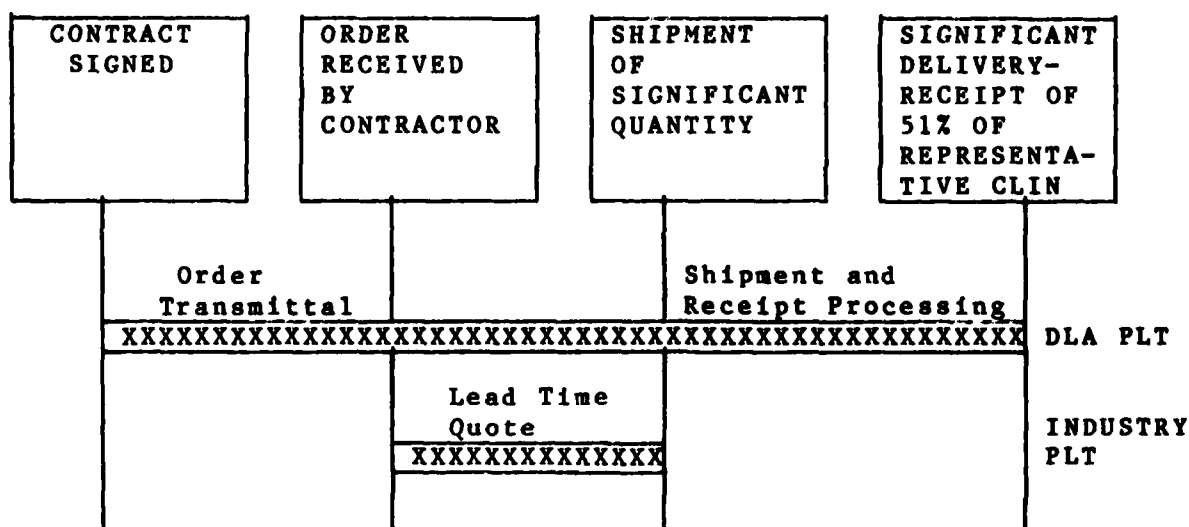


Figure C-10

2. Use of Historical Information in Determining Procurement Lead Time

a. Representative Procurements. A representative procurement is any stock replenishment for which the lead time is considered indicative of those that can be expected in the future and should, therefore, be used in the next lead time computation. Automated procurements are considered representative unless coded otherwise by the IM. For manual procurements, the IM determines whether they are representative and enters the appropriate code.

b. Parameters

SAMMS provides a printout for IM review when the percentage change between the latest actual ALT or PLT and the old average exceeds an established parameter. At DISC, this parameter is set at 25%; at DCSC, 37%.

A budget restriction of 630 days maximum ALT and 630 days maximum PLT is in use. If a calculated lead time is greater, it will be decreased to 630 days by SAMMS.

The minimum ALT is 30 days. If the computed ALT is less, SAMMS will increase it to 30 days.

c. Defaults. Default values are normally used only for assignment of ALT and PLT during item entry. For new items, the ICP average for the appropriate FSC is assigned. If the item is transferred from a non-DLA ICP, either the PLT cited by the losing IM or the DLA ICP average for the FSC is used, whichever is greater.

d. Manual Overrides

The IM has the option of inhibiting the automatic update of the ALT or PLT used for requirements determination. When inhibited, SAMMS makes the computation, but does not overlay the data. Rather, a report is generated to the IM providing a revised lead time recommendation.

Some IMs stated that they override the automated lead time computation and use, instead, the longest PLT on the contract to assure that no stock shortages exist. Others adjust PLT on most medium and high dollar value items.

Presently, there is no indicator in the system that shows when manual changes have been made; however, a system change has been requested that will provide such identification.

e. Other Features

When an inhibit code has been entered, a SAMMS feature allows the choice of inhibiting the update through the next computation, or permanently.

A contracting feature, SAMMS Automated Small Purchase System (SASPS), has contributed to reduced ALT. SASPS Phase I automatically issues unpriced Blanket Purchase Agreement (BPA) call orders to \$1,000, against preestablished BPAs, and delivery orders up to \$25,000 against indefinite delivery-type contracts (IDTCs). Phase II automatically selects the best quote for award and prints the award documents. SASPS accounts for approximately 50% of all awards at DLA hardware centers.

SAMMS produces a Planned Procurement Listing from the Buy Stratification for high dollar items so that data can be validated in advance of actual procurement. The listing can be provided by FSC, organization, or other appropriate categories. By permitting prior validation of data, ALT is shortened when the actual procurement is processed.

f. Forecasting Technique

Lead times are forecast by an exponential smoothing technique. The new ALT or PLT is computed by applying 0.67 to the

latest actual ALT or PLT and 0.33 to the old forecast. The sum of these two products is the lead time forecast. Deviation from these factors requires HQ DLA approval. DISC has obtained approval to use a range of weighting factors for the latest actual PLT, from 0.67 to 0.95, depending on the FSC.

PLT is updated by the exponential smoothing process twice for each procurement action; once when the contract is awarded, using the contract EDD, and again when 51% of the representative CLIN has been received.

All representative procurements are considered in the determination of a lead time forecast. If no manual changes have been made to the recorded lead times, the new forecast will represent all actual lead times contained in the history file. If manual changes have been made, the forecast will represent actual historical data only since the last manual entry. The history files contain the current computed forecasts and the three previous computations.

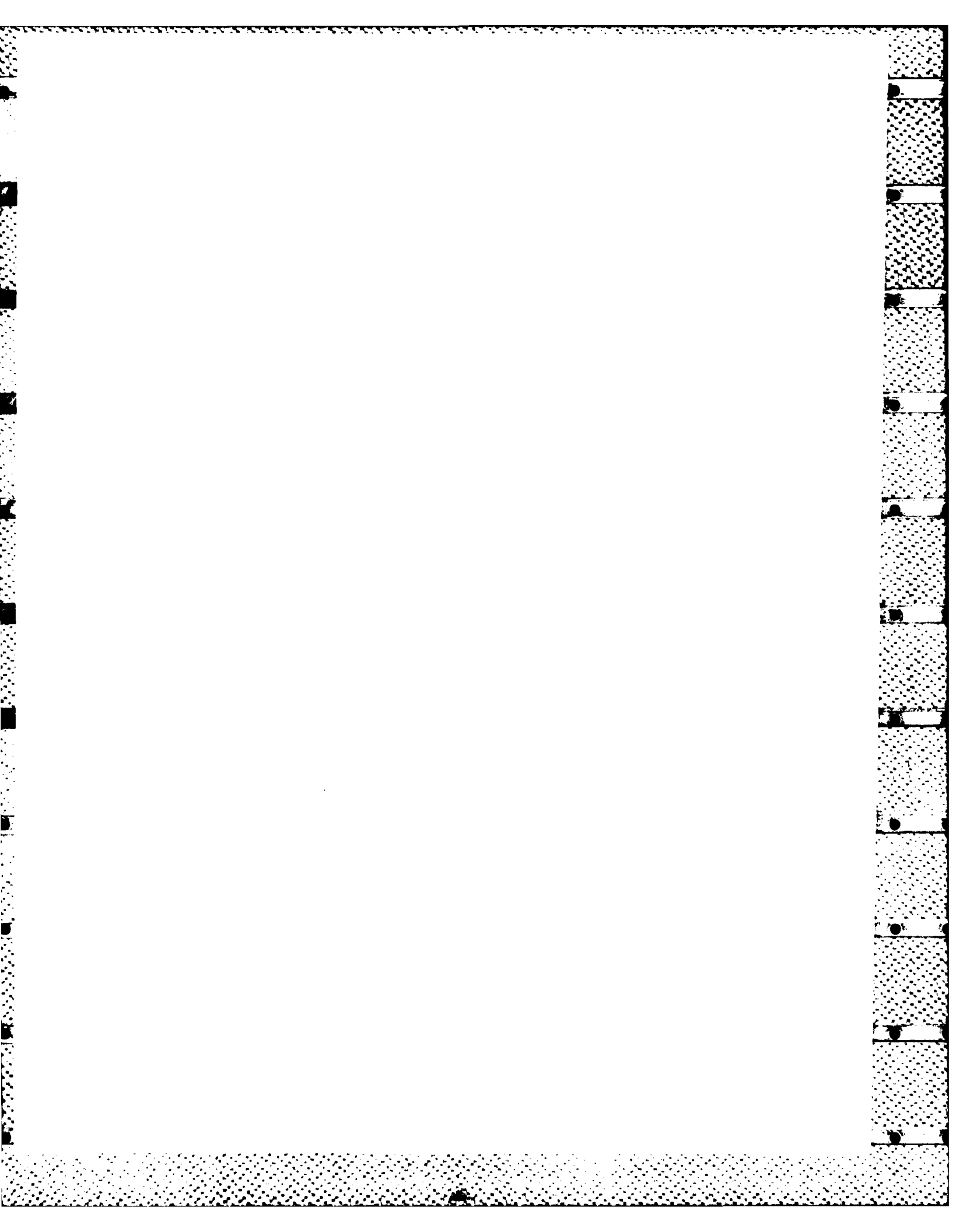
3. Use of Contractor Information in Determining Procurement Lead Time

a. Contract EDDs. As stated in paragraph 2.f., when a contractor furnishes a date by which delivery will be made on a representative procurement, the first of two PLT update computations is made.

b. Survey Quotes. DCSC does not participate in a regular survey quote program. They request a quote only when no history is available or other unusual circumstances are present. DISC requests quotes monthly on 130 NSNs from 325 contractors. The quotes received are at no direct cost to the U.S. Government. The IMs review the quoted PLTs and compare them with the history on file. If significant differences exist, the IM may decide to manually update the PLT for the requirements determination computation and will do so whether it is an increase or a decrease. If quotes are received from more than one contractor, a simple average is used. There is no tracking of how the contractor actually performed against the quoted lead time or against the ICP computed estimate.

4. Use of Market Indicators in Monitoring Fluctuations in Lead Time. DISC employs a market analyst whose duties include the monitoring of lead time information, primarily in trade journals and purchasing magazines. Trade publications provide weekly or monthly information on pricing and lead times. Some of the journals used are listed in Appendix F. The analyst performs research on a regular basis and provides the market information to the purchasing and inventory management divisions.

5. Headquarters Reviews of ICP Lead Times. HQ DLA personnel perform materiel management reviews of their ICPs on a four year cycle.



APPENDIX D

DEFENSE CONTRACTOR PRACTICES

A. OVERVIEW

During field research, the Study Team visited a sample group of 13 Defense contractors. The names of these contractors are shown in Appendix B. They were selected from a list of contractors compiled by the ICPs visited by the Study Team. Selections included a mix of small and large companies, with at least one contractor from each ICP's list. Geographical proximity was also a consideration in the choice of contractors.

Topics discussed with the contractors included the contractors' procedures for developing PLTs provided to DoD wholesale ICPs, the role of lead time in the contracting process, their willingness to provide periodic quotes of lead time to DoD Components, and the usefulness of generic coding in monitoring changes to lead times.

B. DEVELOPING LEAD TIMES

1. Processes. The complexity of the contractors' procedures for determining lead times tends to correspond to the size of the company as well as the types of items manufactured. Smaller companies, which manufacture a limited number of items for DoD, frequently have no formal system for determining lead times. Based on intuition and experience, managers of the smaller companies readily cited typical lead times for their items. Larger companies, which manufacture a wider range of products, generally have formal procedures for developing lead times for DoD. Many of the larger companies have automated systems that maintain quotes of lead time from vendors or subcontractors. Some of the systems store and use data related to engineered or estimated times for various operations in their manufacturing processes. These systems can formulate the lead time for a particular assembly by accumulating the lead times for the subassemblies and long lead time items.

2. Ability to Break Down Quotes. Virtually all of the contractors could subdivide their estimates of lead time into the component processes or delay times. Most contractors begin lead time with the receipt of an order from an ICP, which could be several days after signature of the contract. Contingency time is either added directly into the estimate to allow for variations in any part of the lead time, or is indirectly included in specific subsegments, such as raw materials delivery time. Many of the contractors consider the end of their lead time to be the date of shipment of the first item.

4. Preferences: Historical vs. Contractor Data. A few contractors use primarily historical data in developing lead times, but most prefer quotes from their vendors/subcontractors or a combination of quotes and historical data. Quotes from suppliers are thought to be more accurate reflections of an ever-fluctuating economy, but some historical data may be needed to verify the credibility of the suppliers' quotes.

C. CONTRACTING PROCEDURES

1. Best Estimate of Lead Time. When asked if they provide their best estimates of lead time in response to an Invitation For Bid (IFB), the contractors gave a variety of answers. Some contractors indicated that the Required Delivery Dates (RDD) established by the buying activity would be difficult to meet, so they could not offer earlier delivery dates in their bids. Others bid on meeting the RDD, and offer earlier alternate delivery dates. Most of the contractors who bid on IFBs agreed that it would be in DoD's best interest to solicit prices for a range of lead times and quantities.

2. Economic Production Quantities. The contractors were in agreement that the quantities ordered by DoD ICPs are often less than economic production quantities. Since it is less efficient to produce the smaller quantities, their priority in the production schedule may be lower. Consequently, lead times are generally longer than for economic production quantities. The contractors recommended that DoD ICPs consolidate more of their smaller quantity orders to obtain lower unit prices and shorter lead times.

3. Expedite Requests. With few exceptions, the contractors stated they frequently receive expedite requests from DoD buying activities. From the contractors point of view, such requests are very disruptive and inefficient. Lead times invariably increase as the numbers of expedite requests increase. Although the contractors may charge buying activities premium prices for expedited material, they prefer not to do so. Some contractors believe that the good will they generate in processing expedite actions may be used to offset penalties they might incur for future contract delinquencies.

D. SURVEY QUOTES

Currently, the majority of contractors visited by the Study Team do not provide survey quotes of PLT to DoD ICPs. When asked if they would be willing to provide periodic PLT quotes for items they manufacture, at no cost to the U.S. Government, the contractors' responses varied. The effort required to provide the lead time quotes is costly and time-consuming. The process also represents an imposition on their vendors. Some contractors have most or all of the data on magnetic tape, but not in a format

desired by the ICPs. Others would have to compile the data manually. The majority of contractors would not agree to providing lead times for all their items, but would generally see no problem providing the data for high interest or high dollar value items. Most thought that semiannual quotes would be the most appropriate. The contractors pointed out that quotes provided on recent bids/solicitations would probably still be valid and should not be requested on a new survey.

In summary, with only two exceptions, the contractors indicated their willingness to provide survey quotes to ICPs, but not for all items they manufacture and not as frequently as quarterly. If, at the time of request, the ICP provided the projected procurement plan for the items, the contractors would find the information beneficial for their internal planning purposes.

E. GENERIC CODING

Contractors stated that a generic coding concept could be useful as an early warning system for alerting DoD to significant lead time fluctuations, and helpful in some industries as well. On a small scale, some contractors currently use a similar concept.

The opinion was voiced that the effort now being made by the Army and the Air Force could yield significant savings for DoD if it results in keeping lead times current with market conditions. Suggestions were offered by contractors, which included:

1. Ensure that the categories are broad enough so that their update would not be cumbersome, yet specific enough to yield timely information.
2. Ensure that the categories are representative of their subordinate elements. For example, the processing involved for a particular forging or casting may differ significantly from the overall average lead time for forgings and castings.

APPENDIX E
STUDY REFERENCES

AFLC letter, subject: "Administrative and Production Leadtimes," 13 May 1983.

AFLC Regulation 57-4, "Recoverable Consumption Item Requirements System (D041)," 8 February 1980.

AFLC Regulation 57-6, "Requirements Procedures of Economic Order Quantity (EOQ) Items," 29 September 1977.

AFLC Regulation 84-4, "Production Leadtime Acquisition," 28 July 1976.

Air Force Uses Inaccurate Production Leadtime to Compute Spare Parts Requirements, U.S. General Accounting Office, 16 June 1983.

ALRAND Working Memorandum 271, subject: "Production Lead Time Forecasting," 14 June 1976.

Army Regulation 710-1, "Centralized Inventory Management of the Army Supply System," December 1970.

Basic Inventory Manager's Manual, Navy Fleet Material Support Office, Mechanicsburg, Pennsylvania.

DLA Handbook 7730.2, "Management Information System Glossary," 21 December 1982.

DLA Manual 4140.2, Volume II, "Supply Operations Manual, Defense Supply Center Supply Operating Procedures," 4 June 1982.

DLA Manual 4715.1, Volume I, Part 2, "SAMMS Manual of Operating Procedures for the Contracting Subsystem," 1 February 1982.

DoD Instruction 4140.24, "Requirements Priority and Asset Application for Secondary Items," 10 September 1969.

DoD Instruction 4151.7, "Uniform Technical Documentation for Use in Provisioning of End Items of Materiel," 30 June 1980.

Generic Coding of Items With Changing Production Leadtimes, U.S. Army Materiel Systems Analysis Activity, Fort Lee, Virginia, August 1982.

Measurements and Implications of Production Lead Time Variability, U.S. Army Inventory Research Office, Philadelphia, Pennsylvania, September 1979.

NAVSEA Shipbuilding Support Office (organizational presentation), Philadelphia Naval Shipyard, Philadelphia, Pennsylvania.

Production Lead Time Forecasting Analysis, U.S. Army Tank Automotive Readiness Command, Warren, Michigan, May 1979.

Production Lead Time Forecasting, U.S. Army Inventory Research Office, Philadelphia, Pennsylvania, January 1972.

Proposed Concept for Generic Identification Coding, Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio.

U.S. Army Plant Representative Office, Boeing Vertol Company letter, subject: "Secondary Item Lead Time Study," 7 February 1984.

APPENDIX F

RELATED SOURCES

Armed Forces Journal
Bureau of Mines Statistics
Business Week
Cahners Industrial Product Directory
Cahners U.S. Industrial Literature Directory
DCAS Labor Strike Reports
Design Engineering Magazine
Dunn's Business Month
Dynamic Business
Electronic Design's Gold Book, Electronics Directory
Electronic Type Designation System Technical Data (JTEDS)
Forbes
Forging Industry Association (FIA) Production Summary
Iron Age Magazine
Material Handling Engineering Magazine
Materials Lead Time Information (JAMAC)
Metals Producing Magazine
Modern Plastics
NAVSHIPSO Manufacturing Lead Time Publication
National Defense Journal
Precision Metals Magazine
Product Engineering
Purchasing Magazine
Strategic Stockpile Reports
Surface Warfare Magazine
The American Gear Manufacturers Association (AGMA) Publications
The Nation's Business
Thomas Register
U.S. Dept. of Commerce Statistics
U.S. Dept. of Commerce, Commerce Business Daily, U.S. Printing Office
U.S. Industrial Outlook
Valve Manufacturing Association Directory
Wall Street Journal
Welding Design and Fabrication Magazine

APPENDIX G
PROCUREMENT LEAD TIME
(Proposed)

Procurement Lead Time used in determining wholesale requirements for secondary items consists of two consecutive time periods: Administrative Lead Time (ALT) and Production Lead Time (PLT) (see Figure G-1).

ADMINISTRATIVE LEAD TIME

BEGINS: Reorder point (ROP), or the point at which a procurement order must be initiated so that stock arrives, theoretically, just as the asset level reaches the safety level.

ENDS: Contract award date.

BASED ON: Historical information, to include only representative procurements. Representative procurements are those made for replenishment of wholesale stock, when the procurement action is routine in nature or circumstances affecting the procurement are expected to continue on a permanent basis.

PRODUCTION LEAD TIME

BEGINS: Contract award date.

ENDS: Receipt confirmation date or significant delivery date. Receipt confirmation date applies when PLT is based on a contractor quote, and is estimated by adding to the award date the order transmittal time, contractor quote, and up to 15 days shipment and receipt processing time.

Significant delivery date applies when PLT is based on historical information, and is computed as a quantity-weighted average of receipt confirmation dates and, if necessary, contractor Estimated Delivery Dates (EDDs).

BASED ON: Valid contractor quote, when available. Otherwise, PLT will be based on historical information, to include only representative procurements (as defined for ALT).

SUBSEGMENTS*:

ORDER TRANSMITTAL TIME,
CONTRACTOR QUOTE,
SHIPMENT AND RECEIPT PROCESSING

ORDER TRANSMITTAL TIME

BEGINS: Contract award date.

ENDS: Receipt of order by contractor.

CONTRACTOR QUOTE

BEGINS: Receipt of order by contractor.

ENDS: Shipment of materiel from contractor.

SHIPMENT AND RECEIPT PROCESSING

BEGINS: Shipment of materiel from contractor.

ENDS: Receipt confirmation date.

* Subsegments apply only when PLT is based on contractor quote. Quotes should be analyzed carefully because they may already include time for order transmittal or shipment.

PROPOSED SEGMENTATION OF PROCUREMENT LEAD TIME

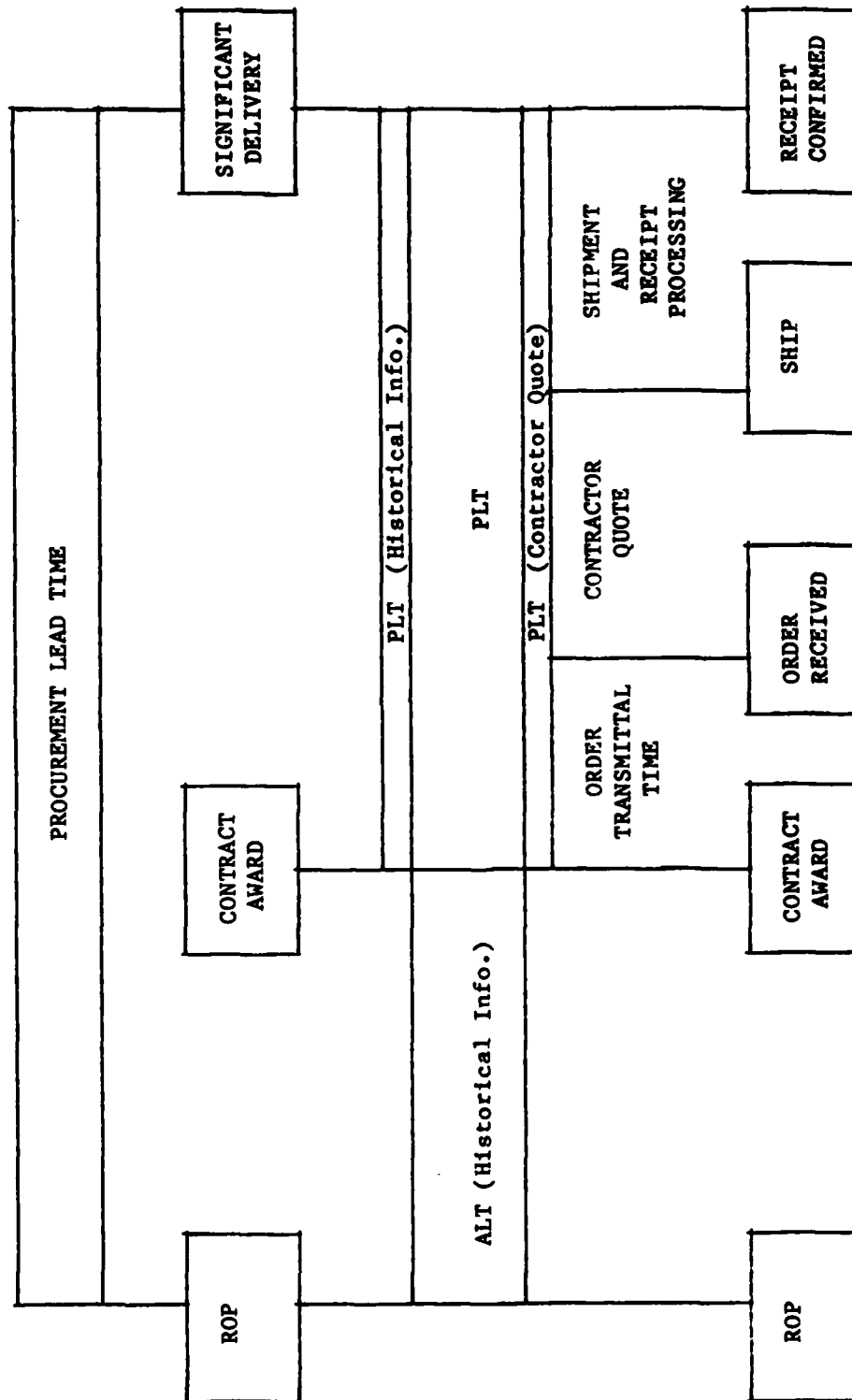


Figure G-1

END

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